



Experiments in Plaster of Paris to Test Expansions.

By Dr. STEWART J. SPENCE, Harriman, Tenn.

Observe that our caption says expansions, not expansion. They are three. The first occurs during crystallization; the second during the twenty-four hours following crystallization, and is due possibly to the absorption of something from the atmosphere; the third takes place during vulcanization and is due to steam.

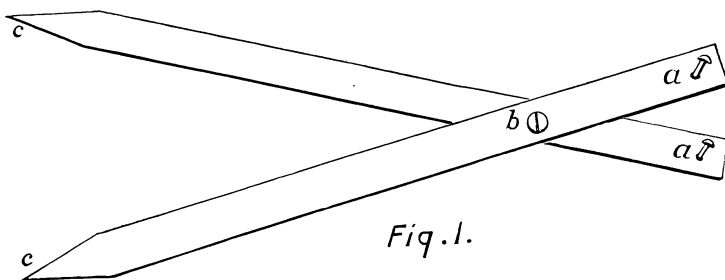
According to the *Encyclopedia Britannica*, plaster of paris is obtained by desiccation from the hydrated sulphate of lime, commercially known as gypsum, an earth found especially in the deposits of the Tertiary period. At 175 degrees F. the gypsum begins to part with its combined water; at from 230 to 250 degrees the best results are obtained, the resulting plaster acquiring the valuable property of recombining with water and setting in the act; but at 480 degrees and upwards this property is lost. The phenomenon of setting "*is accompanied with some expansion and the evolution of heat.*"

**Differences
in
Plaster of Paris.**

The plasters supplied by different manufacturers differ in their degrees of expansion. A year or two ago the writer obtained samples of plaster from seven different dealers in dentists' supplies, and found that the expansion of the most expansive was about double that of the least so, while the other five ranged in varying degrees between these two. In hardness they appeared to differ but little. My experiments have been, for the most part, made with this least expansive plaster, a barrel of which I obtained from the Newark Lime and Cement Manufacturing Co. of Newark, N. J. In quality it is known as "dental plaster," and its expansion, when mixed most favorably for reducing expansion, is 0.55 millimeter in three inches.

Since then I have tested several other brands, but none of them show less expansion than this, except the "impression" and "casting" plasters of the S. S. White Co., the former of which gives 0.42 millimeter as its expansion in three inches, and the latter 0.37 mill.*

These experiments to test expansion were made in three ways—(1) by pouring plaster into the lid of one of the metal boxes in which vulcanizable rubber comes to us; (2) by pouring plaster into an ordinary upper impression tray, and (3) by a scissors-like instrument pictured in Fig. 1, which I will term "expanders." As the first of these three methods affords no very exact means of measuring the expan-



sion, it was early abandoned. The second permits fairly exact measurements by admitting narrow strips of tinfoil in the space between the plaster and tray at the dome of the palatal portion, as many strips as can be easily withdrawn when the tray is resting on the bench and a moderate pressure applied to the cast being reckoned as the measure of expansion. As, however, all casts made in impression cups are liable to warpage, because the flanges oppose free lateral expansion of the setting plaster, and so force it upward at the palatal dome (as explained in my article, "Experiments in Plaster to Test Warpage," in the March *ITEMS OF INTEREST*), therefore I made the previously mentioned expanders, by which I think I obtained the exact measurement of lateral expansion. In Fig. 1, *b* represents a hinge; *a a* are two spurs projecting about three-quarters of an inch at right angles from the blades of the instrument, and designed to be sunk into a strip of plaster mix after it has been poured

*A CORRECTION.—In my article in the May *ITEMS*, "Experiments With Modeling Composition," instead of "the expansion of the least expansive kinds of plaster of paris is not less than 0.35 millimeters in two inches," read, in three inches.

upon a board, and *c c* are the points which indicate by their outward movement during crystallization the degree of the expansion. As the distance from the spurs to the joint is one-fourth that of the distance from the joint to the points, therefore the extent to which the points move apart during crystallization gives, when divided by four, the measure of expansion in three inches, which latter is the width apart at which the spurs are sunk in the plaster. The instrument is about ten inches long. Any dentist can make one in a half-hour.

In making tests by the tray method the personal equation of the experimenter enters somewhat into the calculation, but those made by the expanders seem to scarcely admit an error, and are very uniform in results. By the tray method the experimenter is liable to be deceived because the expanded plaster does not always show a space until the cast has been removed from the tray and replaced. The cause of this may be that the plaster forces outward the flanges of the tray. Again, if the cast on being replaced in the tray is held so that the thumb and finger presses the cast and tray together at the palatal dome, the bending of the tray while thus held may obliterate the space. Let me give as illustrations of this matter of personal equation in this respect the fact that two parties with whom I have corresponded on this subject each declared by letter that their tests by tray of certain plasters which they mentioned showed no expansion, while to me the expansions were quite apparent. One of these was a prominent dentist, and the other a man in a well-known dental supply house. The dentist wrote that the expansion of his cast was almost nil, "certainly not more than one thickness of No. 6 tinfoil." But on testing said plaster I found the expansion to be, even when mixed so as to give least expansion, no less than ten thicknesses of No. 20 tinfoil by the tray method and about 0.55 millimeter in three inches by the expanders. The man in the dental supply house sent me a cast poured in an impression cup, together with the cup, remarking that I would observe the adaptation of plaster to tray to be "thoroughly perfect." But, alas, I found, on the contrary, a space between cast and tray which I could observe at a distance of twelve feet, and into which I could insert thirteen thicknesses of No. 20 tinfoil!

**Effects of
Stirring Plaster.**

Not only do different plasters expand in differing degrees, but *the same plaster expands very differently according to the stirring given it before pouring.* In one experiment I made two casts, which I shall call Nos. 1 and 2, one of which expanded two and one-half times more than the other, from no other cause than longer stirring. All other conditions were alike. The temperature of the water was 75 degrees F., that of the plaster 77 degrees, and in each case the water and plaster were

measured out. Cast No. 1 was stirred as little as possible, the entire time of mixing occupying only ten seconds; it set in ten minutes; its temperature (as shown by thermometer with bulb laid on cast) continued to rise for twenty minutes longer, and reached 96 degrees. The primary expansion (which was then completed) admitted twelve thicknesses of No. 20 tinfoil between tray and cast. Cast No. 2 was stirred one and one-half minutes; it set in one and one-half minutes more; in four and a half minutes longer its temperature reached 107 degrees, and its expansion then admitted twenty-eight thicknesses of No. 20 tinfoil. From this we see that *long stirring of plaster of paris hastens setting and increases heat and expansion.*

When I entered the ranks of dentistry about twenty-five years ago, the accepted doctrine, as voiced in the text books, was that long stirring was the correct thing; that it rendered casts tough and hard. Nothing was said of expansion. Some experiments which I made and published in the *Dental Cosmos* of November, 1883 (and which were later incorporated in Prof. Richardson's "Mechanical Dentistry"), exposed the error of this doctrine and showed that long stirring vastly increases expansion without adding hardness.

The expanders pointed out to me the fact that *the primary expansion proceeds only during the period in which the heat of the crystallizing cast is rising.* Thus it is complete in from five to thirty minutes.

Another interesting phenomena was made to appear by the expanders. They showed that there occurs a second expansion, proceeding gradually for about twenty-four hours and amounting to about one-fourth or one-fifth that of the first expansion. To illustrate these two facts let me copy two items from my notes:

- a. Plain plaster of paris; short stirring; set in thirteen minutes; expansion commenced before set; expansion reached 0.7 mill. in thirty minutes; in twenty-four hours expansion had increased about 0.06 millimeter. No further increase in three days.
- b. Plain plaster of paris; stirred two minutes; set in one minute more; expansion commenced before set; heat and expansion over in fifteen minutes more, showing 1.6 mill. of expansion. In thirty-four hours expansion had increased 0.4 mill., making total expansion 2.0 millimeters.

As previously explained, these expansions were those of three inches of plaster and were measured by the expanders.

Thus we see that both long stirring and short stirring of plaster gave this second expansion.

From this fact of a second expansion we learn that some little may be gained by pouring the model on the day on which the impression (if of plaster) is taken. We also learn that it is almost impossible to get ahead of the first expansion of the plaster impression by hastily pouring the model. And from the fact that long stirring increases expansion, we learn that such mixing should never be employed in forming either impression or model of plaster of paris; that if a stiff impression mix is desired in order to compress soft gums while taking the impression, it is better to obtain it by waiting patiently with tray and mix in hand until it begins to set. (Personally the writer has altogether abandoned the ordinary plaster for impressions, and uses either modeling composition, because of its contraction, or a plaster of his own compounding, which has the three desirable qualities of non-expansion, softness when set and quickness of setting. The present paper is devoted only to the study of the phenomena of the common plaster of paris.)

But there is a *third expansion of plaster of paris*.
Third Expansion of Plaster of Paris. When the writer, over a year ago, was experimenting with a method for preventing the expansion of plaster, and had succeeded in eliminating the first and second expansions, he was surprised to find that results were

still not altogether what he had expected, and in searching for a cause of failure it occurred to him to suspect the influence of the vulcanizer on the model. Therefore a number of old casts which had been run in impression trays, some of treated plaster and others of plain, were placed in the vulcanizer naked (i. e., not invested, as is a model in flask) and subjected to a bath of 320 degrees F. for sixty minutes. The result was most astonishing; they all came out badly swollen! This *third expansion* was about equal to that of both their previous expansions together. Even the treated casts, which had shown no previous expansion, were now swollen. Here appeared a fertile source of ill-fitting vulcanite plates!

Two of the casts were our old friends, Nos. 1 and 2, but sadly changed. They had gone through the vulcanizer. No. 1 now showed almost as much expansion as did No. 2 before their immersion, and No. 2 had become bloated to beyond twice its previous expansion. *This proves that plaster of paris casts expand in the process of vulcanization.*

In a number of instances I have subjected a cast to repeated passages through the vulcanizer, and have found each immersion to increase its bulk, until after four or five repetitions of the ordeal (by which time they became past going) the space between tray and plaster has reached the enormous extent of a twelfth of an inch! This seems to speak unfavor-

ably for long vulcanization. How far the lesser heat would counteract the longer time I have not tested by experiment, but am under the impression that the two or three years in which I vulcanized at low heat for four hours were those in which I had the largest percentage of ill-fitting plates.

On discovering that heated water causes expansion of plaster of paris casts I tried reducing the quantity of water, at first placing only a spoonful in the vulcanizer, and afterwards none at all. In this latter case I relied on the water held in the plaster to provide sufficient steam. In neither case was the result favorable. The casts still expanded, and with little diminution. A thorough drying of the plaster was found to prevent expansion and even to produce contraction. Thus it was demonstrated that this third expansion of plaster is caused by steam. But experience soon proved that to dry filled flasks and then vulcanize rubber in them is a long and troublesome process. The heat will not pass 212 degrees F. until all the steam has passed off, which requires over an hour, and then it suddenly shoots up in a way difficult to control. I tried this method for some months, ruining several plates thereby, and was very glad when I had succeeded in so doctoring my plaster as to overcome its expansion in steam and thus allow me to return to wet heat for vulcanizing.

On discovering that my casts expanded in the vulcanizer, it occurred to me that this expansion, though so much in evidence with naked casts, might possibly be prevented by the pressure of surrounding rubber in cases invested in the flask. To test this matter, plaster of paris was poured into an impression tray, thus producing a model, which was covered with sheet wax and invested in a flask, exactly as is done in making rubber plates, except in omitting the teeth. After being vulcanized this plaster model was carefully removed from the rubber plate and returned to its place in the tray. But it refused to fit back into this matrix, *showing nearly as much expansion as the previously tested naked casts had shown*. Though this seemed conclusive, for I could see no room for error, yet "to make assurance doubly sure" I repeated the experiment substantially in the same manner, and obtained a similar result.

Thus it was proven that a plaster model is so forcibly expanded by the action of steam during vulcanization that it overcomes the resistance to expansion offered by the vulcanizing rubber, and swells.

Therefore the dentist who uses plaster of paris for models has to contend with three expansions in his model, and, if his impression was of plaster, with at least one expansion in it, besides the warpings of both impression and model, which, as I showed in a previous paper, occur from restricted lateral expansion. No wonder so many vulcanite plates are misfits!

Dental Society Reports; Are They Satisfactory?

By WILLIAM H. TRUEMAN, D.D.S., Philadelphia, Pa.

I have just finished reading "Society Proceedings" in the last dental journal received, and have been prompted thereby to ask the above question. I have long felt that it is by far the least satisfactory department of dental literature, a department, indeed, in which we have "progressed backward." Comparing the proceedings just read with those of the first dental society reported—while they are more voluminous, while they may be a more accurate record of what took place, while they contain much of value—I am not at all impressed that in grammar, in nicety of expression, or directness of language, they can be considered an advance, or accepted as evidence of educational progress in the dental profession.

While there is in the character of these proceedings some little difference between the various dental journals, and a somewhat greater one between the societies reported, in all that goes to make up well-written, concise, interesting and instructive reading matter, they, with but few exceptions, fall short—very far short—of that which we have a right to expect, and are in these respects in marked contrast to the other contents of the journals in which they appear.

This is in part explained by the presumption that a competent editor carefully scans this other matter, and by here and there changing a word or expression, by recasting a sentence, or judicious punctuation, corrects many little errors that even a careful writer may overlook. He feels at liberty to do this; he can, after reading the article and grasping the writer's ideas, appreciate and understandingly correct such errors, and by little changes vastly improve and make more presentable the writer's effort. And again the writer of an essay or an article feels that he is personally responsible for its entire make-up; and he can, naturally, in the quiet of his study, more carefully choose his words and expressions than when he is in the presence of others, "speaking on his feet."

The advent of the stenographer has not been an unmixed blessing. Formerly the societies selected as secretary or reporter some one competent for this task; to make any report at all he was obliged to pay close attention to all that was going on, and then, from his hasty notes, while the matter was still fresh in his mind, he wrote out at his leisure the full report, occasionally submitting portions of it to the speakers for amplification or correction. Very many reports so prepared were models of excellence.

But few stenographers employed by dental societies are themselves

dentists; but few are able to report matters which they do not understand. It is very seldom, if ever, that a verbatim report is a proper one for publication. It is presumed that the purpose of publishing reports of dental societies is to place on record, to make known to a far wider circle than its own membership, the suggestions and ideas that the meeting has brought out. To fully accomplish this it is necessary in all cases that they should be carefully edited by some one capable of selecting the pregnant thoughts and giving them exact and proper expression.

To me, a member of a profession claiming a high educational standing, it has been depressing and humiliating so often to see in our most prominent journals reported discussions in which gentlemen supposed to be well educated are made to say absurd things in language so ungrammatical that it would disgrace a mere schoolboy.

A gentleman may say apologetically "that he was not present when the very interesting and highly instructive paper was read by his friend, who he knows from long intimacy to be incapable of writing any other kind of a paper." It may be his right and perfectly in order for him to explain to his fellows the reason of his tardiness. He may, with equal propriety, preface his remarks with his confession that he is, in regard to the subject under discussion, a complete ignoramus. He may truthfully say so, and later say much that adds value to the society's proceedings. But is it necessary, is it desirable, to incorporate these explanations and confessions, of local interest only, in the society's published proceedings? They may sound well as spoken, they may be acceptable to the hearers, they may even add interest to the remarks which follow; yet in cold type, read by strangers, they become disgusting, time-wasting trash. • Not unfrequently half a page is occupied with such stuff; and in the same report these apologies and confessions now and again are so often repeated that one may naturally infer that the highly interesting paper was read to ignoramuses and empty seats.

**Blackboard
Illustrations
Not Reported.**

Now, there is another fault. A speaker uses the blackboard to illustrate his remarks. It is often necessary to so do. It would be a very easy matter to substitute for the blackboard a sheet of black paper that would take the crayon equally well, and so preserve his impromptu drawing for reproduction in the published report. It would entail but little trouble and but little expense. Or again, it is not a difficult task, in most cases, to so word the report as to give the reader a fair idea of the speaker's suggestions without referring to the drawing at all. The usual plan, however, is to give the remarks verbatim, without the drawing; and how absurd it is! You will not need to look far for something like this, nor look long, to duplicate it many times:

"The doctor draws on the blackboard. Now, Gentlemen, we will make a cut here, at this point which I mark A, carry it down this way to B, then curve it around so, just a little way, and you see how easily we get access," etc., etc. With a little search you can find page after page so occupied, a mere mass of meaningless words; without the diagram they convey not a single idea. No one can tell what the man was talking about, nor what he intended to illustrate. In the reports to which I have referred one of the speakers passed around some teeth, and occupies considerable space on the printed page calling attention to this, that and the other peculiarity, no doubt visible enough to those who had them in their hands, but to those who read his reported remarks it is all Greek.

Now, are such reports satisfactory? Are those who send such trash to the journals sane or insane? Do the members of societies so reported ever read their reports? If they do, they must be satisfied with them, for they regularly appear, just the same, month after month and year after year, and are a disgrace to the profession.

Is it possible that these societies, in this enlightened age, have not in their membership sufficient literary talent, or sufficient love for their profession, or sufficient self respect, to see to it that their reports are put in proper shape before sending them for publication?

The stenographer's report makes an excellent foundation, but strip it of all that is redundant, preserve every atom of value, but put it in language chaste, exact and concise; make it interesting and smooth reading, such as will be, in time to come, a credit to your society and to the profession.





The Plate and Dowel Crown.*

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X

(Advantages. Indications. Requirements. Method of Construction; Typical Cases; Root Preparation; Six Anterior Teeth, Bicuspids. Adaptation of Plate, Adjustment of Dowel. Extensive Destruction of Root: Swaging Plate; Impression of Root, Dies, Dowels. Construction upon Models.

In view of the great variation of conditions presenting, and because of the possible objections to a band which may be made with reason and consistency in some instances, and in certain classes of cases; together with the advantages to be derived from a close and more or less perfect adaptation of the base of the crown to the end of the root, and the esthetic possibilities afforded—the plate and dowel crown differing from the preceding style by the *absence* of a band, and consisting simply of a plate and dowel base, has a wide range of application and usefulness, and is somewhat extensively advocated and employed in the restoration of the crowns of the ten anterior teeth.

Advantages. When the employment of a band is contraindicated, or seemingly undesirable, such a style of construction affords the advantage of securing a closer line of junction between the crown and the root, by *burnishing* or *swaging* a thin metal base and then adjusting a dowel and completing the crown in the usual manner, than could possibly result from grinding one surface to conform closely with another, such as becomes necessary in the application of the various forms of ready-made porcelain crowns.

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While the esthetic possibilities also thus afforded are desirable, the principal features lie in the conservation of tooth structure, the preservation of the normal condition of the gingivae, and the degree of permanency that must result from obtaining a perfect joint between the crown and both the *base* and *periphery* of the root.

This style of construction is especially indicated

Indications. in two general classes of cases, and is applicable to a third as follows:

First: In pathological conditions where any extensive preparation of the remaining root, such as would become necessary for a band, is precluded because of its instability, or because of the physical or nervous condition of the patient; or, where a recession of the gum from the normal gingival line would require the application of a crown without a band for esthetic reasons.

Second: Where the decay and destruction of the root is so extensive as to preclude the possibility of applying a band,—in which conditions, because of the extreme shortness and consequent close proximity of the end of the root to the border of the alveolus, no opportunity for securing an accurate adaptation of a band is afforded.

In this class of cases a crown may be constructed by swaging or burnishing a base to a close conformation with the surface and irregular edge of the root, with a degree of accuracy of adaptation, and support to the root which will offer a secure and reasonably permanent attachment.

Third: It is also quite generally applicable and more or less extensively employed in those typical cases where the root is sufficiently large and strong, and free from the evidences of caries or disintegration, as to probably require no support and protection, such as the application of a band affords.

Also, it is particularly applicable and perhaps most often the desirable procedure, in restoring the crowns of partially developed teeth in the mouths of *young* patients, because of thus avoiding any possible irritation to the more or less susceptible, sensitive and highly organized tissues in such cases.

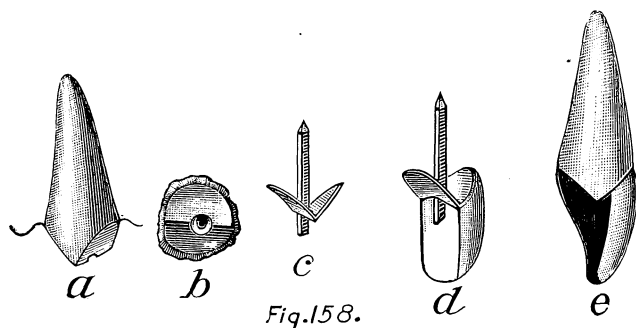
The requirements of construction constitute securing a preparation of the root, wherever sufficient tooth structure remains, which will mechanically prevent subsequent displacement of the crown, and of then securing adaptation of the base to both the *surface* and *periphery* of the root, which will afford a firm seating, and, in so far as possible, preclude a dissolution

or disintegration of the cementing medium, or the subsequent occurrence of caries.

While a close observation and fulfillment of these requirements will doubtless make such a result possible, the degree of stability in the attachment will, of course, depend much, if not entirely, upon the dowel; which, because of this assuming a preponderance of the stress imposed, must be properly adjusted to the canal, and of uniform and adequate rigidity.

Method of Construction.

As the method of construction for this style of crown differs only in the details incident to the preparation of the root, and the adaptation of the base, all reference to the application of the facing and the completion of the crown, whether for gold or porcelain work, will be purposely avoided, because the procedure from this point on is identical with that which is elsewhere considered in connection with each.



Typical Cases. In the application of this style of crown to typical cases, such as have been considered in the *first* and *third* classes of indications, and which will be confined mostly to the six anterior teeth, the first essential feature in the detail of construction is the proper preparation of the basal surface of the root.

Root Preparation. In this particular the requirements differ from those incident to the band and dowel crown, in that *no peripheral trimming is necessary*, and that the end of the root must be so shaped as to offer mechanical resistance to the stress imposed.

Six Anterior Teeth. In the six anterior teeth this may be accomplished by beveling the root both labially and lingually from a central point, so that the plate, which is to form the base of the crown, will straddle the exposed end, thus also

overcoming any tendency toward a possible rotation or displacement of the crown.

The *labial* bevel should usually extend from the lingual edge of the pulp canal to a point sufficiently far beneath the gum to allow for the thickness of the plate, and thus admit of placing the neck of the facing in direct contact with the tissue, which adds to the esthetic effect by making the joint invisible.

The *lingual* bevel should not extend quite to the gum line, because of the absence of esthetic requirements upon this surface, and of the probable advantage in having the joint *exposed* to view to insure the accuracy of adaptation, and to the movements of the tongue and action of the secretions, to render it more hygienic or self-cleansing. (Fig. 158 a.)

This preparation may be easily accomplished with flat-edge carborundum stones, though the use of the root facer will facilitate cutting the root below the gum upon the labial surface. Wherever enamel is allowed to remain, however, and no band is employed, this instrument must be revolved slowly, and used with extreme care.

While a similar preparation is usually desirable
Bicuspid. for first bicuspid, because they are also subjected to some lateral stress, it is not so essential to the second bicuspid, for the reason that these teeth usually receive vertical stress mainly, hence a flat base, such as is indicated in Fig. 53, is all that is necessary, if the size and adjustment of the dowel is adequate.

When the desired preparation has been secured,
Adaptation of Plate. a piece of pure gold, or platinum, as the requirements of the intended construction of the crown may indicate, about 34 to 36 gauge, should be cut a trifle larger than necessary, annealed, and burnished to a perfect adaptation with the surface of the root.

This is easily accomplished with flat and round burnishers, and the soft rubber tip of a lead pencil will also be found useful. While the thinness and softness of either pure gold or platinum will admit of securing the required adaptation by *burnishing*, the same may also be accomplished by a primary swaging, if preferable, though the latter method is more requisite in difficult cases, and will be subsequently considered.

After securing the proper adaptation of the
Adjustment of Dowel. plate, the canal should then be prepared for the reception of the dowel, and the latter fitted to it, when the plate should be replaced in position and the opening of the canal outlined in it with a round or oval burnisher. (Fig. 158 b.)

The plate should now be perforated with a sharp-pointed instrument or plate punch, and the dowel forced through the perforation until well

into position. While the close fit thus secured between plate and dowel will usually sustain their relation while removing and soldering, if the same is doubtful, the usual means for sustaining it, as previously described, may be observed.

The two should now be permanently attached with solder and then again placed in position on the root and reburnished, when the surplus may be trimmed away and the plate reinforced to prevent a possible change of form while taking the impression, and subsequently detaching from the model. (Fig. 158 C.)

When the plate is of gold, this reinforcement should be made by flowing a thin layer of 20 karat solder over the surface and around the dowel, while if a platinum plate has been used, and a porcelain crown is to be made, twenty-five per cent platinum solder, or pure gold, may be employed.

The usual "bite" and impression should now be taken and models secured, when the facing should be selected and ground to a perfect joint with the labial and cervical aspect of the plate, if it is to be backed up and finished with gold (Fig. 158 d), and the crown then completed in the usual manner, and finished and mounted. (Fig. 158 e.)

Extensive Destruction of Root.

In that class of cases where the root has been more or less extensively destroyed from disintegration, or accident, and presents a concave surface and frail and irregular edges so deeply embedded beneath the gum as to preclude the adaptation of a band, and yet possessing sufficient stability and integrity to afford a reasonably firm attachment for a well-adapted crown, as has been mentioned in the *second* class of indications, the first essential procedure, incident to the construction of the crown, is to tightly press away the surrounding soft tissue with temporary stopping, or gutta percha, until a *free exposure* of the end of the root is obtained.

While this may require two or three sittings, repeating the procedure at each, such time will be found to have been well expended, when it is desirable to make an effort to successfully crown such teeth, because of thus making possible and facilitating the accurate adaptation of the plate to the root, and the subsequent permanent attachment of the finished crown.

When the root has been thus freely exposed, the irregular edges should be ground down with small stones, or root facer, until as smooth and even as possible; and all decay then removed, after which the remaining root should be thoroughly disinfected and sterilized, in order to arrest any further progress of caries.

The best means of obtaining the correct adaptation of the plate to the root will depend much upon the condition presenting, and while the required conformation may often be obtained by burnishing, a more certain, and perhaps increased, accuracy will not infrequently be secured by swaging.

To accomplish the swaging, whenever such procedure may be indicated, or seem desirable, an accurate and well-defined impression of the edge and surface of the root must be taken, and fusible alloy dies made therefrom.

The use of pink base-plate gutta percha affords the most simple and accurate means of obtaining a well-defined impression of the end of the root.

In the procedure this should be cut into moderately small pieces and

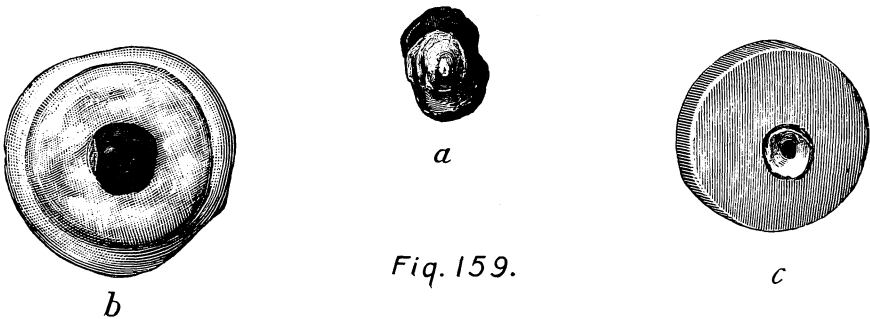


Fig. 159.

carefully and slowly warmed, on a mica slab over a flame, or on the electric annealer, until it is *plastic*, when a quantity sufficient to fill the space to be occupied by the crown should be tightly packed with burnishers over and against the end of the root, and in between the adjacent teeth, if any be present.

Care should be observed to avoid over-heating or burning the gutta percha, as such accident entirely destroys its manipulative qualities.

This should now be chilled with a spray of cold water, and removed (Fig. 159 a), and when sufficiently accurate, fusible alloy dies may be obtained from it.

To obtain the dies, the impression should be invested, with the imprint of the root downward, in a base of plaster of proportions sufficient to be subsequently trimmed to admit of the adjustment of the rubber casting ring (Fig. 159 b). When the plaster has become thoroughly crystallized, and

Dies.

has been thus trimmed, it should be placed over a small flame and allowed to heat slowly until the gutta percha may be removed (Fig. 159 c), when the rubber ring should be adjusted, and the die, and subsequently the counter-die, secured with fusible alloy.

Pure gold or pure platinum, as the requirements may indicate, of the thickness of about 34 gauge, should be now annealed, and swaged, after which it may be further adapted to the root by burnishing, as already indicated, and the dowel, or dowels, then adjusted and soldered.

The length and size of the canal, or canals, in such roots will indicate whether one or two dowels should be used, and as they are generally much shorter than usual, and the major portion of the strength of the attachment will depend upon the dowel, it is essential that it should be of adequate size and length to *thoroughly fill the canal*; hence the use of two, whether they may be separate from each other, or in contact and subsequently united with solder, is frequently required.

Dowels.

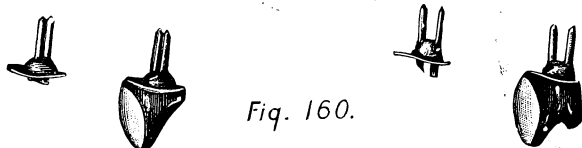


Fig. 160.

The relation between the plate and dowel, or dowels, should be temporarily secured in the manner indicated, and then permanently sustained by soldering, and wherever two dowels are used, and particularly when they are separated, an investment should invariably be employed.

When they have been soldered, the cap should be placed upon the root and the edge of the plate readapted by burnishing, in which the use of a smooth foot plugger in the automatic mallet will often be found advantageous.

The usual "bite" and impression should be then taken and the crown completed as the requirements may indicate, as illustrated in Fig. 160.

While the interior of such roots is sometimes previously filled with cement or amalgam, and the plate then adapted to this surface by burnishing, the increased accuracy obtained by swaging it to closely follow the concaved surface of the root, and the additional support thus rendered to the latter with a minimum quantity of cement, adds materially to the integrity of the attachment between the two, when subsequently mounted.

**Construction
Upon Models.**

In instances where it may become necessary to construct the crown upon models, the most useful and accurate reproduction of the conditions may be secured by first fitting a wooden dowel into the canal and then packing gutta percha over and around it, until the impression of the end of the root has been obtained, as indicated.

When the desired degree of accuracy has been thus secured, it should be placed in position, and a plaster impression then taken over it. The removal of the latter will usually bring the gutta percha with it, but if not, it should be detached from the root and placed in its proper position in the impression.

When this has become thoroughly dry, the open ends may then be closed up with mouldine, and the impression filled with fusible alloy.

After separating from the plaster, and detaching the gutta percha and wooden dowel, this procedure will result in a metal model with a more or less perfect reproduction of the root and its canal, upon which opportunity is afforded for the construction of the crown in the manner indicated, and with reasonable accuracy.

Recovering and Refining Waste Gold.*

While it is very probable that the average dentist will have neither the time, inclination nor facilities for recovering the waste gold which daily finds lodgment in, or becomes attached to, sweepings, rugs, carpets, disks, strips, etc., yet the method usually employed in obtaining and refining it may be of some general interest.

The sweepings and such various articles as may contain gold are first placed in a suitable vessel, and subjected to a degree of heat in a blast furnace which will reduce them to ashes and residue, after which this latter is then *finely powdered*.

The gold, together with its impurities, can now be separated from most of the ash, carbon, sand, etc., by a mechanical process of *washing*, in which, because of the high specific gravity of the metallic masses, the latter will seek the lowest point, allowing the residue to remain on top.

The gold may now be extracted from the remaining mixture of heavy material by the following method: Treat with nitro-hydrochloric acid (aqua regia), heat gently, agitate occasionally, and then allow the mixture to stand for a few hours.

*Introduced by Dr. Goslee at the request of numerous readers.—Ed.

The solution is now evaporated until all free acid has been expelled, when it is allowed to cool, and alcohol and potassium chloride are added, which precipitates any platinum that may be present.

The gold may now be precipitated from the *filtered* solution by adding ferrous sulphate, c.p., or heating it with a solution of oxalic acid, when the precipitate, a fine brown powder, should be washed with distilled water, placed in a graphite crucible and thoroughly fused with potassium nitrate (saltpetre), or borax, as previously indicated.

The molten metal may be then poured from the crucible into a previously warmed and oiled mould, when an ingot of pure gold is obtained, which may be alloyed, if desired, and rolled out to suitable thickness for use.



SOCIETY PAPERS

A Method of Inserting Artificial Crowns.

By JOHN RALPH OWENS, D.D.S., Cleveland, Ohio.

Read before the Northern Ohio Dental Association, June 9, 1902.

My only apology for again presenting this method of crowning teeth after a bench demonstration of the same at Columbus at the meeting of the State Society, several years ago, and a clinical demonstration before this body a year ago, is the promise I made to numerous inquirers as to whether the method of my demonstration would be published.

I promised that it should be at some time.

In a prepared paper it is possible to elaborate upon the various modifications possible to meet necessary exigencies in crowning teeth which it is not practicable to accomplish at a clinic.

I believe it will be conceded that in crowning teeth, the greatest weakness is the permanent union between the crown and root. The dowel uniting them withdrawing from the root, or because of reaming out the root to receive the dowel or post, the root splits when brought under too great a strain, thus destroying the crown's foundations. The method which I have adopted and wish to present to you, reduces to a minimum these defects. It is composed of parts of two systems that are known to you, namely, the How and Davis. The How post, and the Davis crown are employed.

Advantages of Porcelain.

I take it for granted that we are all agreed that in placing a crown upon the anterior teeth it should be one that imitates nature as nearly as possible and that it is no situation for a gold crown.

The gold crown is of great utility on the roots of broken down molars, where the display of gold is not conspicuous, but to disfigure the face so that every time a person opens his mouth a glaring mass of gold becomes the most conspicuous object is not an operation that should make us proud of our profession.

Having agreed that the porcelain crown is most suitable for the front teeth, or at least a porcelain faced crown, let us consider which is the stronger, a solid porcelain crown or a crown built up and having a porcelain face with backing of gold or other metal, or lower fusing porcelain body. The porcelain crown is one homogeneous mass and surely stronger than a thin veneer of the same. The weakness of a porcelain faced crown is the danger of breaking the porcelain face. This is reduced if the built up portion is a lower fusing porcelain body, but my observation leads me to believe that it is not so strong as a solid crown of high fusing porcelain. Then as to appearance, the solid crown of porcelain so closely imitates nature as to be entirely satisfactory. Last but not least it is the most sanitary crown made. For these reasons I have chosen the solid porcelain crown.

**Adaptation
of Dowel.**

I have stated that the greatest weakness of crowning teeth is the nature of the union of root and crown, this being due to weakness of adhesion of dowel or post in the root or splitting of the root when under too great strain. My method reduces to a minimum these defects. Using the How post obliges cutting away only enough of the tooth structure to admit of screwing the post home, and the tapping of the socket with the coarse thread used in that system makes it possible to retain a dowel or post with the least likelihood of its withdrawing by strain, of any method I can conceive, while the strength of the root is virtually unimpaired as the portion drilled out is not much more than the space of the pulp canal.

If there must be weakness anywhere it is better that it should be between the dowel and crown, rather than between dowel and root. Every time the dowel or post needs to be reset, the root is weakened because each time more of the structure of the root needs removal owing to disintegration. So the nearer that connection can be made permanent the better, and no pains should be spared in endeavors to do so. With the Davis crown it is a very simple matter to place another crown on the root in case a crown is broken. But with my varied experience only one or two crowns have broken, while I am sorry to say I cannot make so good a report in regard to the everlasting union of post and root. But I know of nothing better, and by experience I have been able to reduce the proportion of failures.

Adaptability.

Another desirable feature of this system is its adaptability. The crown may be fitted to the root more accurately if not encumbered with a fixed post or dowel. If the root needs reinforcing with a ferrule it can be set independently of the crown. This ferrule may be a simple band or strength-

ened still more by soldering a plate of metal over one end, perforating the same to slip over the post. In fractured teeth very often the break extends to a considerable distance underneath the gum. These ferrules can be fitted to fill out the original contour of the root, then cemented to place, thus forming a good foundation for the crown. But where the root is strong, not weakened by decay it is preferable not to have a band or ferrule. Even with the greatest care to have the band fit accurately about the root of the tooth, it has generally been found when the root was extracted that the adaptation has been faulty and thus the edge of the projecting band becomes an irritant to the gum or gingival margin. For this reason I do not believe in banding the root unless it is necessary to do so to strengthen the root, or restore a wall of the root that is missing either

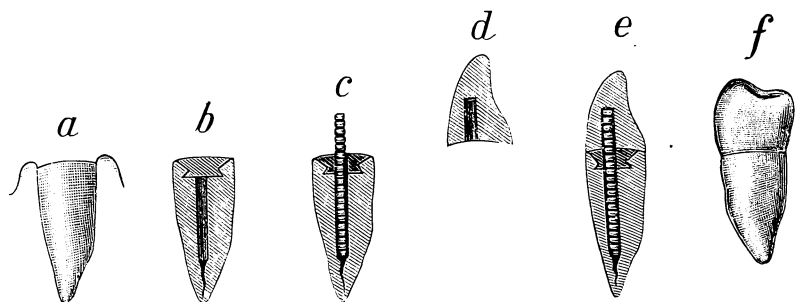


Fig. 1.

from decay or fracture, and some bicuspid with two well defined roots, such as I shall show later.

Details of Procedure.

The root of the tooth to be crowned should be rendered aseptic and as healthy as possible. The apex of the pulp canal then sealed with oxychloride of zinc. The reason I prefer cement to chloro-percha is because there is no shrinkage and the cement thoroughly stops the entrance of moisture to the canal. This is quite necessary from several standpoints. It prevents the disintegrating of the dentine, thus enabling the How post to remain firm in the root. For these reasons oxychloride of zinc makes the best root filling generally, and oxychloride of zinc in preference to oxyphosphate of zinc because the oxychloride of zinc mummifies all animal matter in the dentinal tubuli and makes a thoroughly aseptic filling. The phosphoric acid has no such desirable qualities. Decay is more liable to continue under an oxyphosphate filling than under an oxychloride filling.

We will now take a simple case for crowning. Fig. 1 a shows a superior cuspid root. The end of the root is trimmed to a flat slightly cylindrical surface, the convex curve extending from front to rear, as seen at a and about a sixteenth of an inch beneath the gum margin. I have found a rattail file, proper carborundrum points and sharp chisels the best instruments with which to accomplish the shaping of the end of the root. With a large bur clean out the end of the root, leaving only the slightest flat surface possible at the edge. With an inverted cone commence in the root canal and cut a cavity of sufficient depth to permit an undercut and extend it towards the periphery as far as you can without unduly weakening the walls of the root. With a wheel bur make the undercut. The purpose of this treatment of the end of the root is to make a cavity that will retain an amalgam filling and thus protect the end of the root from decay. The next step is to clean the root canal. Measure the length of the root and have the length indicated on the broaches used in dressing the root and filling it. To insure the thorough sealing of the apical foramen, my method is, after the root is thoroughly sterilized and dried out, to take a roughened Donaldson broach with the length of the root indicated upon it by a metal slide in order that I may not go beyond the end of the root; twist a shred of cotton on the end of the broach, keep the root dry by use of napkin, etc., mix Houghton's os-artificial to a thick creamy consistency and incorporate as much of it as possible in the cotton on the broach and quickly carry it to the apex of the root canal. Untwist the cotton by rotating the broach and gently tamp it home, using care not to press it beyond the end of the root. I have the drill and screw tap at hand and immediately after filling the root canal I drill the hole for the How post, because it is easier to drill through the surplus cement when soft than after it is hard, and the drill follows the canal better. The hole should be extended as far as you can safely drill into the root without breaking through its walls, and screw-tapped its entire length. While this work is going on the cement is setting; after this is completed protect the cement from the moisture by filling the canal with temporary stopping.

In selecting a crown the color and size must be carefully considered. If the exact shade of color cannot be obtained it is better to get a darker rather than a lighter shade. In selecting a cuspid it should be several shades yellower than the incisor teeth. The size in diameter should be sufficient to cover the root entirely. Rather too large than too small, because if too large and it projects beyond the root it is a simple matter to grind the excess off. Special care should be given to the joint along the labial margin because if the gum recedes and there is a poor

**Fitting the
Davis Crown.**

joint it becomes unpleasantly conspicuous. The articulation should be carefully noted; however, even after the crown is set it is a simple matter to alter the articulation with a carborundum point. Having fitted the crown, we are now ready to apply the rubber dam. The gum about the root is treated with orthoform to decrease the pain attending the application of the clamp and rubber. The clamps I use for crowning purposes are of my own design. The loop is larger than in the usual clamp in order to reach over some of the adjoining teeth in cases where the teeth have elongated. The clamps are in pairs, one jaw is a single point the other two points. These pointed jaws permit of forcing up the gum to grip the root with the least possible pressure on the gum. The clamp is first adjusted and the rubber dam slipped over the clamp and adjoining teeth. With a floss silk ligature the edges of the rubber are brought around the edge of the root and tied, to prevent leaking. This requires special care as the root must be as dry as for any other filling. Removing the temporary filling in the post socket, the root is sterilized and dried. The How post is placed in readiness in the post holder that comes with the How crowning outfit. A creamy mixture of oxychloride of zinc is made and the end of the How post to go into the root is covered with it and immediately screwed home in the root. A portion of the cement is carried down in screwing the post home and seals the post in the socket. The surplus cement is wiped out of the counter-sunk cavity in the end of the root as this is to be filled with amalgam. If the end of the post projecting from the root is too long to permit the crown, when slipped over the post, to make a good joint with the root it is cut off with proper metal nippers. It may be necessary to bend the post in one way or another in order to make the crown cover the end of the root properly. This being done we proceed to fill the end cavity of the root with amalgam. This amalgam filling is for two purposes: to preserve the root from decay and the crown from rotating. I have used cement for this filling, such a joint being shown at f in Fig. 1, but found it would disintegrate and permit decay to take place. So I should recommend the use of amalgam in all cases. I have found that Garhart's white alloy works nicely, also the "Splendid" alloy. The amalgam is packed carefully into the undercuts of the cavity and built up over the end of the root. The crown is carefully put into place, and a wooden post of convenient size used for pressing firmly against the cutting edge of the crown, this being gently tapped with a mallet until the edges of crown and root meet. Continue to hold the crown with the post and with proper instruments trim away the surplus amalgam. Carefully remove the crown to see if the amalgam is in sufficient quantity at every point and trim the amalgam from about the How post in order that the cement used to hold the crown in place

may have sufficient grip on the post. The amalgam answers two purposes, as I have previously stated. It stops decay of the root where it is joined by the crown, for which reason care should be exercised to see that it covers the end of the root properly and that the cavity is so prepared as to retain the amalgam. It is not safe to depend upon its adherence to the How post for retention, for therein lies the second purpose of amalgam, namely, preventing the post and crown from rotating. The amalgam if anchored in the root with undercuts remains firmly in place and the crown having made its impression in the amalgam where coming in contact with it forms a base upon which it cannot rotate. This matter of rotation, in my experience, has been a common source of failure, but with this method of treatment rotation is made almost impossible.

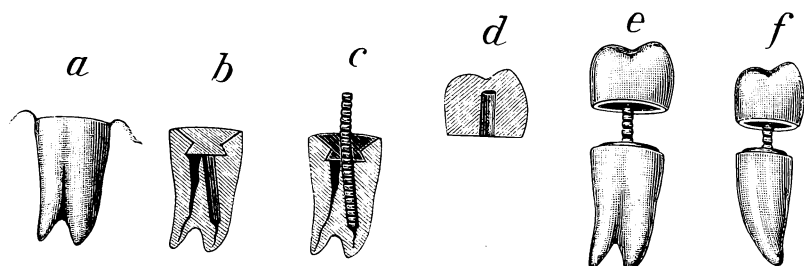


Fig. 2.

We are now ready for the setting of the crown.
Setting the Crown. I use Justi's insoluble cement. Mix this oxyphosphate to a consistency somewhat thicker than cream, quickly fill the socket of the tooth and the adjoining surface, place the crown on the root and with the wooden post press firmly home; to make sure of it, tap gently with the mallet. Hold the wooden post firmly against the set crown for several minutes, until the cement has set enough so the crown will not rise up, as it is likely to do because of the soft cement being under pressure. Trim away the surplus cement about the joint, while it is soft, being careful not to disturb the amalgam. Let the cement set for fifteen minutes at least, after which the rubber dam may be removed.

In crowning a bicuspid tooth with two roots or canals, select the larger canal for the post; after the post is inserted bend so as to bring the portion for holding the crown in the center of the root as at c Fig. 2.

**Crowning
Fractured Teeth.**

Sometimes we have cases of fractured teeth where the break extends under the gum or cases where the decay has destroyed the wall some distance under the gum. Many such cases require the support of a band. The preparation of root and anchoring of post in such cases are the same as ordinarily employed, but the enamel margin of the root is removed and made slightly conical about its circumference. Then a band is fitted extending below the margin of the break or decay, and as accurately fitted as possible, as shown at d Fig. 3.

The edge of the band coming in contact with the crown should be filed perfectly flat and the corresponding surface of the crown ground flat to meet it. If the crown overlaps the band the surplus should be

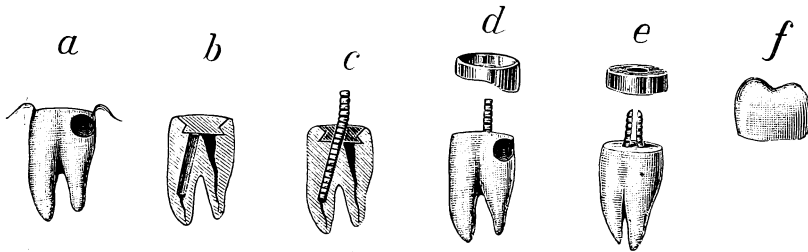


Fig. 3.

ground away until it is just flush with the band. In setting such crowns it is sometimes impossible to apply the rubber dam. It is necessary in these cases to keep moisture away by means of napkins or other absorbents. The most satisfactory astringent in my hands for preventing bleeding of the gums is a creamy solution of oxychloride of zinc gently wiped over the bleeding tissue.

In the case figured I set the band and crown with oxyphosphate of zinc at the same time. Everything is made ready for immediate use; parts of spunk in abundance for absorbing moisture; small pellets of cotton ready to press cement home; cement on mixing tablet and every necessary instrument at hand that a moment may not be lost when every moment counts because of the setting of the cement. Then the napkin is adjusted and the root and parts dried. The root canal has previously been filled and the post inserted and the amalgam filling placed. Have the parts dried, and if the gum is inclined to bleed it is gently covered with

the solution of oxychloride of zinc. The band is placed on the root but not pressed home, just far enough so it will not drop off. The oxyphosphate is mixed to a consistency somewhat thicker than cream, some quickly carried and filled into the cavity made by the band, more to the socket of the crown which is then placed upon the retaining post and all together driven home by means of the wooden post and mallet.

The cement will follow the band on the root and seal the root from decay. The joint between band and crown is so close as to prevent the disintegration of the cement, and altogether makes a very satisfactory operation.

For roots where the interior is greatly weakened by decay the same method may be employed. The band in such cases helps to strengthen the root, and for dentists who are partial to bands this method may be employed in all cases. Greater strength may be obtained for the band

**Crowning Roots
Weakened by Caries.**

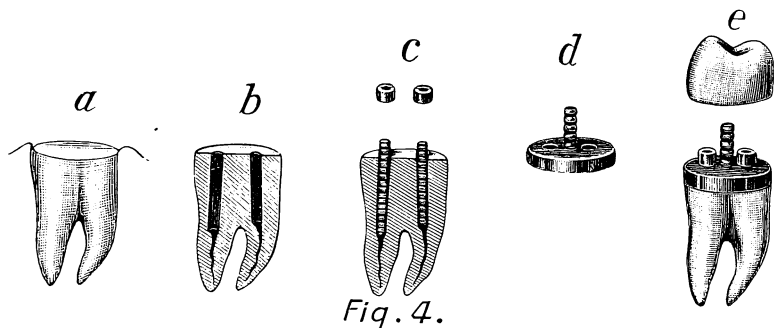


Fig. 4.

by soldering a plate over the band and perforating it to have the post pass through as at *e* Fig. 3. The root in this instance carried two How posts, one in either canal, and these were brought together for holding the crown.

The last case I will describe is represented in Fig. 4, which shows a large bicuspid with two very distinct roots. A How post is set in each root and a nut prepared for each as at (*c*). The root is banded with a plate soldered on the band, the plate perforated for the entrance of the posts and a central post soldered in the center of the plate (*d*) for attaching the crown. The band is set with oxyphosphate of zinc, and permanently held by a nut on either post as shown at *e*, Fig. 4. The socket of the crown is enlarged with carborundum points to permit its fitting over the nuts and posts. I can conceive of no crown being firmer or more durable than this.

There are many possible cases that I have not touched upon, but I have described enough to show the principles, and I leave it to those who wish to try this method to make the application that their judgment dictates.

President's Address.

By W. L. FISH, D.D.S., Newark, N. J.

Read before the New Jersey State Dental Society at Asbury Park, July, 1902.

When I look at the magnificent programme for this, our thirty-second annual meeting, I cannot restrain a feeling of pride that our State should possess within its borders an organization composed of professional men who hold the respect of the profession at large to such an extent that they are enabled to attract all that is richest and best in literature, science and art pertaining to dentistry and spread it before our guests as an intellectual feast, proving not only a feast for the mind but a relaxation to the weary body of the busy practitioner.

It is here we have met year after year and observed the gradual evolution of our meetings from a mere handful of ardent workers—imbued with the spirit of professional and brotherly love, striving always to broaden the scope of each succeeding meeting, ever mindful of the fact that “in union there is strength”—until today, when we meet as one of the largest if not the largest State dental society in existence.

To the busy practitioner who cannot spare the time for a visit to the numerous supply houses, this meeting will afford a welcomed opportunity to investigate and examine each new invention and method. It is here we meet in a fraternal way the men whom in our offices we are apt to dismiss with our compliments. It behooves us to aid and encourage our exhibitors in a business way in order that they may feel the benefits derived, for while they owe their existence to us, we too owe much to them.

I cannot but feel the immeasurable loss to those who do not attend these annual gatherings, and even among those who do attend there are many who do not derive the full benefit which they should, because of their non-participation in the numerous discussions, and yet stowed away within the gray matter of their brains may be some thought or idea worth much to the rest of the profession. Would that the saying, “Still waters run deep” might not be so true, but rather that it be as a raging torrent with the gems of thought riding the crest within our grasp. It is but fitting that at this time a tribute should be paid to the untiring efforts of our very efficient corps of committeemen, who have rendered such loyal service to the Society.

Programme.

In the editing of our programme, Dr. Meeker, our genial secretary, has once more added force to his motto, "I lead, but never follow." Dr. Hindle, I am proud to say, has excelled all previous records in the number and completeness of the exhibits, and I believe we have the largest number ever assembled at a dental meeting in this or any other country. The efforts of Drs. Irwin and Hawkes, of the essay and clinic committees respectively, commend themselves to your earnest consideration, and I feel sure they will meet with your hearty approbation.

**Dentists
in the Navy.**

During the past year nothing new has arisen to disturb the equanimity of the profession at large, aside from the unfortunate termination in our efforts to have a dental corps established in the United States Navy. To Dr. Williams Donnelly, of Washington, D. C., we owe a debt of gratitude for his untiring (even if so far they have proved unavailing) efforts to secure the passage of the measure. I feel certain that had the dentists throughout the country done their duty the bill would have become a law. Should the measure be introduced at a future session of Congress I believe it possible for this society, through its officers, to secure the support of the entire Jersey delegation in Senate and House, which would do much towards the ultimate passage of the bill.

**Illegal
Practitioner
Convicted.**

In local matters a record has been made, through the efforts of one of our county prosecutors, Dr. S. C. Slade, of Vineland, N. J. For the first time in its history the State Board was enabled to prosecute and convict a person for the illegal practice of dentistry. While the case has been appealed to the Supreme Court, we rest upon laurels won, and Dr. Slade is to be congratulated upon the efficient manner in which he has carried out the trust imposed upon him by the society. If every one of our county prosecutors would profit by this example, it would enable the State Board to rid the State of every illegal practitioner.

Were it not for usurping the prerogative of our State Board, I would say more upon this all-important subject. As we are to elect a new member of the State Board at this meeting, it behooves us as sponsors for the same to elect a man who will meet in every way the highest ideals of the profession. In no other way can we expect to merit the confidence of sister States, when the day shall come for a universal interchange of license.

**To the
Younger Members.**

To the young men who are affiliating themselves with us I would say a few words in relation to their position in the profession of their choice, as yet in its infancy. But a few years have elapsed since we

were struggling along seeking for recognition, and today we stand as a recognized specialty in medicine. Whatever has been accomplished in the past has come from careful scientific research by men who labor for the love of the profession and not from ulterior motives. The tendency is growing in the line of original research, and we have but to peruse the pages of our journals to learn of the rapid strides in this direction. Our whole line of thought seems to have undergone radical changes; from theories have developed facts, based upon sound scientific investigation, resulting in broadening and stimulating the mind along a higher and more intellectual plane. I believe we have among us now some young men who will one day stand upon the same pedestal with such men as Miller, Williams and Black. Those of us who have passed the meridian of our professional careers cannot take up this work; it remains for vigorous young manhood to delve deep into the unknown depths and give to the world that which lies hidden in the fields of physical science and chemistry. Specialism within our profession holds out inducements that appeal to us all in our daily professional duties. No man can excel in every branch of dentistry. The oral surgeon is probably the most important, and I would that in every large community we might have a real oral surgeon; a man of the dental fraternity he should be, for no general surgeon can work from a dental standpoint. What greater obligation do we owe our patients than that we give them the best the profession affords? It makes me shudder to think of the mistakes made through ignorance, where the advice of the specialist would have prevented the terrible results. I advise the young men when in doubt to seek the specialist. Should they not, sooner or later they will pay the penalty. In connection with the foregoing, I would recommend that the membership committee pay strict attention to the professional ability of candidates for membership, for in no other way can we keep up the prestige of our society.

Once more do we pay a tribute to those of our
In Memoriam. members who have passed from us during the year.

Abigence Waldo Kingsley, M.D., died at Maitland, Fla., March 3, 1902, in the 86th year of his age. Dr. Kingsley was the second president of this society. Personally he was beloved by all, having held many positions of trust in the community in which he lived. As a professional man he stood upon the highest plane, having the respect of the entire profession.

In the death of Dr. C. S. Ingliss, of Paterson, who died Sept. 15, 1902, the society lost one of its younger members who gave promise of a long and useful career and whose quiet and unassuming nature endeared him to us all.

It is but fitting that I pay a tribute to one who had so much in common with us during the last few years.

Charles Ernest Green, M.D., died May 26, 1902. Born in old Virginia, with a nature kissed by the gentle goddess, we loved him, and his departure from our midst leaves a void which time alone can fill.

In conclusion may I ask the earnest co-operation of each member to the end that we may begin our sessions at the scheduled hour, that ample time may be given to our essayists and discussions.

Electric Ozonation in Neuralgia.

By G. LENOX CURTIS, M.D., New York.

Read before the New Jersey State Dental Society at Asbury Park, July, 1902.

The term neuralgia may be applied to all pains found in animal tissue that may be regarded as being nearly or quite in a perfect physical condition, especially if the pains have become chronic. To designate the locality of the cause of the pain, and which may or may not be in the region of pain, leaving out what may be regarded as functional disturbance, we may mention, for illustration of my subject, facial neuralgia, gastralgia, myalgia, as of the pain in myelitis and pyelitis, all of which are only different phases of disturbances called neuralgia. The locality of the keenest pains may be in the parts suggested by those names, or they may be at greater or less distance. Neuralgia in and about the face and mouth is generally easily determined, but there are cases where there seem to be complications.

Other forms of pain, such as gout, rheumatism, sciatica and lumbago, may all come under the general term of affections of the nerves and may also be treated in connection. But this would open a wider field than I desire to discuss at this time.

The pain about a tooth in one jaw may cause pain in the opposite jaw. It is well known that a defective lower side tooth often causes pain in the upper tooth. But it may be said that in cases of pulpitis, gingivitis, periostitis and pericementitis, the pains are found in the parts involved.

As these latter forms of neuralgia are probably the ones that will most interest this audience, I will confine my remarks mainly to them. My aim is to call attention to the power of electric ozonation; its effect upon this disease I regard as a comparatively new phase of practice in medicine.

After three years of experimental work, I called the attention of the medical profession to it in October, 1901, in a paper read before the Academy of Medicine in New York.*

*This paper was published in the *N. Y. Med. Journal* of Jan. 18 and Feb. 1, 1902.

In that paper the plan by which ozone may be properly made, and at the same time enable the practitioner to force it directly into and through the affected parts was clearly set forth. I also explained its effects and gave report of cases in which the stimulating and ozonizing speedily re-established the normal functions. When nerve force and proper nutrition are established and equilibrium is re-established, a high condition of health is the result. I do not wish to be understood as saying that by electric ozonation a normal physical condition can be re-established in a diseased organ, such as follows the loss of tubules in chronic nephritis, abscesses of the lungs and liver, or a cicatrix in a nerve trunk following a traumatic lesion or calcaric deposit in the pulp of a tooth. But I do imply that by electric ozonation, nerve force and circulation can be sufficiently re-established in the parts to lead to health, and the parts be left in the best condition possible under the circumstances.

The mechanism that will make this remarkable element is a system of coils of fine wire, so arranged as to change the quality of the current of electricity, from the street, into this wonderful therapeutic agent.

One of the changes in the electric current effected by passing through the machine is increase of voltage, while at the same time the amperage is reduced, thus causing a high tension current. The capacity of this machine is 1,000,000 volts and about $1/50$ of an ampere, capable of producing a large amount of ozone. The higher the voltage, and the lower the amperage, the less is the degree of shock experienced by the patient. It re-establishes nervous functional activity, thus stimulating tissue repair.

The current from this machine, which seemingly has but a single pole, passes through the body and then escapes into the atmosphere, which may be regarded as a negative pole.

Among the advantages of this machine is easy handling—that is, it is easily carried about when traveling. The fact that it may be used wherever there is an incandescent current, without its being affected by conditions of the weather, is an important virtue.

Removing the cause of neuralgia generally stops pain. For illustration, the removing of a pulp stone, necrosed bone, an irritating filling, gas in pulp chamber or alveolar abscess pressure. But there are cases that require the element of greater length of time before unanimity is established, and electric ozonation tends to shorten this time.

Among other disturbances of the nervous system that may be mentioned are those that cause hemiplegia and catalepsy. But association with other disturbers sometimes embarrasses diagnosis. I recall a case of hemiplegia, supposed to be from brain lesion, that was completely dissipated after the removal of an alveolar abscess. I also recall a case of catalepsy from the same cause. Slight irritation may not cause neuralgia when

vital force is at par, but when vitality is low, neuralgia in almost any part of the system may continue and lead to neurasthenia.

While investigating the cause of pain, for the purpose of giving relief, the practitioner generally believes that the pain is the result of a lesion. Should lesion not be found, I think that the surgeon should never operate until a careful and exhaustive examination of the patient's system is made and he has ascertained the full conditions of health. This examination may show that the patient is in a very debilitated condition and the vitality so low that there is not sufficient supply of nerve force for a high condition of health. Under such circumstances the overworked and inflamed nervous system needs assistance, and as pain is nature's voice calling for help, it may be regarded a blessing in disguise. To illustrate the importance of making careful diagnosis and to show how we may help nature I will present two cases, recently in my practice, one in which a lesion was determined, the other in which a lack of vital force was the cause of the pain.

Case 1.

Mr. I., aged eighty, had suffered for twenty-five years from facial neuralgia of a very acute character. All his teeth, one after another, had been extracted without giving any abatement of the excruciating agony. Under these conditions his health gradually failed, and the paroxysms of pain became more and more intense, until continued agony made his life hardly worth preserving. This was his condition when brought to me by his physician for consultation regarding the advisability of resection of the lower dental nerve. Upon a careful examination I found that his nervous system was in a very feeble condition, and with its present capabilities would not generate enough nerve force to furnish half the vitality necessary for even a moderate condition of health.

It was clear to me that his nervous system must be awakened and made more vigorous before improvement could be seen. I suggested a course of ozonation, and the advice was acted upon. After two weeks of daily ozonation his general health had improved to a marked degree, and with this change rapidly came the gratifying result—entire freedom from pain. This ozonation treatment was continued two weeks longer, when sound health was firmly established.

This highly satisfactory condition lasted a year, when the death of a dear member of his family caused him great sorrow and necessitated a long and fatiguing journey by railroad. The grief and journey combined so exhausted his vitality that neuralgic pain was again felt in full force. He came to me again for treatment and was treated by the same method, and was once more restored to vigorous health. He now continues to live and enjoy life free from pain.

Case 2. Another case was that of Mrs. E., who had, for twelve years before I saw her, been subject to long periods of suffering from neuralgia in one side of the face. She had, one at a time, all the molars extracted without gaining relief. During the examination I asked her what had been the condition of her general health. She replied that her "health was good," but her nervous, anxious expression contradicted her assertion and showed clearly the irritable state of her system. I continued my examination and concluded the cause to be pulp stones in the upper bicuspid of the affected side, and advised the removal of the pulps or possibly extraction of the teeth. I found her vitality very low, none of the functions of her organs performing regularly, thus showing that a patient's word cannot always be relied upon in such matters. In no sense was she a well woman.

She would not consent to surgical treatment that seemed proper, but after the ozone treatment was suggested she concluded to accept it. After the second treatment all signs of pain in the parts disappeared, and after a month's treatment her general health was seemingly entirely restored, and for two months she was free from pain. But later, contracting a violent cold, and the bicuspid becoming troublesome, with slight paroxysms of pain, she again came to me for relief. After several ozone treatments all pain disappeared. When last I saw her, she was in good health and had no returns of the neuralgia. I believe, however, that until the pulp stones are removed she will occasionally have a recurrence of the pains when her vitality runs low. I may mention that, previous to the time that she came to me, she was considering the resection of the Gasserian Ganglion.

I have observed similar results in other cases.



Ethnographic Odontography.

By ALTON HOWARD THOMPSON, D.D.S., Topeka, Kansas.

Read before the New Jersey State Dental Society at Asbury Park, July, 1902.

The studies of the writer in the field of comparative odontology, led by a natural sequence of steps up to ethnic odontology and the desire for knowledge concerning the different characteristics of the teeth that might exist between the different races of mankind. It had been observed by various writers that there were some differences between the lower and the higher races—that the teeth of the low races were larger and coarser and nearer to the apes below them, and that the teeth of the higher races were more refined and degenerate in form and structure and more susceptible to disease. But beyond this vague generalization there seems to be but little known. The literature of the subject proved to be very unsatisfactory when searched for definite information in regard to anatomical features that had a real ethnic value. What observations have been made have regard mainly to dental and oral diseases, abnormalities, etc., and very little in reference to variations of form or type. This lack of material for scientific generalizations of the ethnology of the teeth has been bewailed by many writers. The dictum that Mantegazza gave forth many years ago still holds good, i. e., that "An ethnological study of the teeth has yet to be made, and when made, will reveal distinctive characters of great importance." This observation holds true today, so that it has been a matter of great disappointment to the writer to find that in the pursuit of reliable data upon which to found observations that even the physical anthropologists, those who make a minute study of somatological characteristics have so little to offer regarding the macroscopic features of the teeth, which we as dentists are accustomed to observing. Some of the leading anthropological writers, it is true, do give some general observations about the teeth (some of which, *en passant*, are erroneous), but do not observe the special morphological features at all. Thus a famous lecturer of the anthropological school of Paris said some time since of the teeth of the Mongols that "They present nothing remarkable, either as to size or shape!" Such observations, or the lack of them, do not suit us as dental specialists. And this, in contrast with the minute and painstaking observations he gives regarding the various indices of the skull and jaws which he worked out on these same people so thoroughly and completely as to have a distinct and positive ethnic value. But the teeth, for some curious reason, while acknowledged to present great variations that might be utilized, do not seem to have been studied

as much as other parts of the body, parts which do not always present as much variation. This neglect seems unaccountable.

Failing to find in literature the information desired, the writer set about corresponding with various scientific men who could likely direct him to sources where the data desired could be found, or furnish something from their own observations that would be of value. But here a greater disappointment awaited him, for the general reply was that the subject of the ethnology of the teeth had been sadly neglected and should be investigated. Mr. Charles Tomes wrote that "I am afraid that I cannot give you much help on the ethnology of the teeth. We have allusions to it and descriptions of the teeth, but they are widely scattered in the midst of other matter and sadly in want of collecting."

So it seemed that the data from which to make any general deductions was entirely wanting: i. e., such data as would seem to be indispensable to us as dental specialists, accustomed as we are to the great variations of the anatomical features of the teeth as they come under our observation in daily practice. We cannot but believe that there must be differences in the morphological features of the teeth, as between races, that ought to have a positive diagnostic value. It seems that we as dentists ought to contribute to the creation and the working out of the science of ethnic odontography that might be of service in the field of physical anthropology. We have a more positive and minute knowledge, both scientifically and practically, of the macroscopic features of the teeth and of their variations, and are in many ways better equipped to do this work than the general anatomist and anthropologist. Especially is this true since in our colleges students are being trained as never before in the details of human odontography which will fit them for such scientific work. The writer would take occasion to urge upon graduates the importance of attention to this science and the value that any contribution to it would be. Educated dentists are now scattered all over the world and are in contact with nearly all the various races of mankind, and I would urge them to study the races at their doors in reference to the variations of the anatomical characteristics of the teeth. They could thus aid in the creation of a new science and be of service to the world in the accumulation of knowledge.

Of course many minute anatomical features of the teeth are difficult to isolate and classify so as to make them of positive ethnic value. The variations even between the individuals of any one race, especially of the higher races, are so considerable as to make the variations as between races still more difficult to differentiate. The whole gamut of the possible variations of the teeth seems to be presented by the individuals of every race, which makes it still more confusing. This fact seems to lessen the chances of being able to distinguish distinctive features that might have an ethnic

value. But this great variation of the anatomical features of the teeth indicates that we have a mass of evidence that must mean something. We must consider that the accumulation of facts bearing upon any science, the most of which seem at first to be very general, are very confusing to the uninitiated, and that they demand special preparation by the student and require special skill and practice in the work of differentiation and classification before deductions can be made from them that will be of value. So it is with this subject. However confusing it may seem to be on account of the obscurity of the factors involved, we must not be discouraged. As it is a comparatively new science, we must begin at the beginning and first arrange our facts, and this will be a long and tedious process when we consider the field among both modern and ancient races. It is not a work to be accomplished in one lifetime, but will need to be passed on to another and perhaps to still another generation, but the results will well repay for the time and labor if we, as a profession, establish such an exact science.

**Does Civilization
Produce
Variation?**

Chas. Tomes says: "There seems to be great variety of the teeth among all races of men, least among savages, most among civilized races. In the anthropoid apes there is greater constancy of the minute anatomical features, but even with them there is an occasional degeneracy of the teeth, showing a tendency to variation which in them has already resulted in the suppression of the third premolars (which is still present in the American monkeys) and of the third incisors and the fourth molars." So we have a general degradation of the teeth, and consequently increasing variation, which is augmented as we approach the higher races, but which originated away back in our simian ancestors. With them the features are very constant; with the lower races of man there is some variation, and the tendency to variation increases as we approach the higher races, in the scale of human evolution. Variation of the teeth is therefore due in a large degree to their degenerate condition in man, especially the higher races, for the features are more constant as we approach the lower stages of our phylogenetic history. We find this is the rule also with lower animals. Highly bred dogs have greater variation of the number and perfection of the teeth than their lower wild relatives, the wolf and the fox. With them the features are more constant, as the environments of life are more constant, than that of the highly bred, domesticated varieties.

The opinion is advanced by leading scientists that the human race, especially in its more civilized varieties, is undergoing a rapid evolution. The rapid changes of structure that the descendants of lower forms are undergoing today is reflected in the teeth. But as we go downward in

the phylogenetic scale we find special features more persistent and hence of more distinctive value. Just as wild animals present fewer variations than their domesticated descendants, who have been surrounded by different conditions and environments inducing new variations, so the savage man with more rigid and limited environments presents fewer variations in his structure as between individuals, than his higher, more civilized brother who has made new environments for himself with corresponding effects upon his structure. There are organic and physiological variations of structure, not including those due to pathological causes, that are directly due to influences which come under the general head of surroundings or environments. These lead to organic changes affecting the development of the individual, which, becoming permanent, form types. Some of these types perpetuate themselves, and by surviving come to have a specific value, for they distinguish distinct groups of individuals. When we come to know more of these variations and of the structural and functional variations that accompany them we shall be able to classify them so that they will have a diagnostic value. As regards the teeth these variations are yet unknown to a large extent and so are of course unclassified. Hence they cannot have a distinctive value or be diagnostic as regards races. Therefore it is our first duty to begin at the beginning and study and classify the variations of the teeth among all races. Our suggestions at this time must be regarded as only general and preliminary to more detailed observations.

And first as regards the jaws. As Prof. Geo. A. Dorsey says (*Den. Cos.*, Vol. 49, p. 213): "In the recent phylogenetic history of man's face each bone which enters into its formation has been greatly modified.

Modification of the Jaws. This is especially true of the bones which comprise the jaws. As the forehead has become more and more prominent, the prognathic character of the jaws has greatly diminished, and at the same time there has been a corresponding decrease in the total length of the hard palate. As the latter decreases in length, one of two results follow: either the alveolar arch shortens, and thus there is a diminished extent of the dental arcade, or the alveolar arch remains of normal absolute length, and then there results a greatly increased breadth of the hard palate. Variations in the total length of the alveolar arch gives rise to innumerable variations in the number and position of the teeth." The prominence of the lower face, the jaws—prognathism, as it is called—is a characteristic of the lower races of mankind, and they approach the anthropoid apes in this respect. In the higher races the jaws recede and diminish and the brain enlarges and advances the cranium over the jaws. This is orthognathism, or the vertical face—as characteristic of Europeans. As we descend in the

scale, the jaws become more and more projecting and prognathous and the brain case recedes. Of course there are some exceptions, but the rule is of general application. Most savage tribes are prognathous, and the remains of fossil man are especially so. The jaws are heavier and stronger in low races; the horizontal ramus is reduced; the palate and alveolar arch are lengthened so that the third molars are visible from the side, while in the higher races they are nearly concealed by the ascending ramus. There is also greater width and depth of the hard palate, as shown by Dr. Talbot's investigations, although there is great variation and uncertainty regarding this index.

A conspicuous feature is the form of the chin.

The Chin.

In the quadrumana the chin recedes rapidly backward from the alveolar border, the latter and the lower incisors being inclined forward. This is also marked in the remains of fossil man found in Europe, and is also prominent in the lower living races of mankind. As we rise in the scale the teeth become more perpendicular, the jaws recede and the chin advances until in the higher races it is quite prominent and full, as in Europeans. Going downward in the scale, the chin recedes more and more until the type of fossil man is reached, which is of quite a simian form.

The teeth of man, as we know, are closely related

The Teeth.

in number, form and structure to the apes below him, and remotely to various members of the quadrumana.

Indeed, like other organs, they bear in their structure the history of a long line of descent, and many of the indications of their origin can be read with some certainty. As Ward says: "As the heraldic divisions of a coat of arms convey to the practiced eye information concerning forgotten ancestors and their valiant deeds, so, too, is man's genealogy blazoned on his molars, where he who will may read." There is not so much of a gap between the low races and the higher apes as between the lower and higher races of man. As the teeth of man are strong and well made they approach the simian form and integrity; as they are defective and ill formed they depart from it. The structural integrity of the teeth is much more deficient and degraded in the higher than in the lower races. The teeth of man in general are degraded in form and structure and much reduced in specialization as compared with, for instance, the highly specialized teeth of the carnivora and herbivora. Some of man's teeth are quite primitive in type, as the quadritubercular molar, which is found far back in the Eocene, and occasionally this lapses into the still more primitive form of the tritubercular molar. The reversions to lower forms often presented are of peculiar interest, and exhibit their descent and relationship in a remarkable degree. The teeth of man being

rudimentary as compared with the lower primates, these reversions are not unexpected. The distinguishing features of the anthropoid apes, and even of the monkeys and lemures, we sometimes see repeated in man; thus a third incisor, a third bicuspid and a fourth molar sometimes occur as reversions to lower forms in which these teeth are present. The upper bicuspid sometimes have three roots and the lower two, like the quadrumanus. The second lower molar in lower races has the fifth tubercle, which is a simian feature. Other items of reversions to quadrumanous, or even insectivorous dental peculiarities, are not uncommon.

The incisors project forward and meet edge to edge in the apes, and this is repeated in the low races; but as we ascend in the scale they become more vertical and the edges lap. The laterals are wider in the apes, but in man they become narrower so as to be quite in contrast as to the width of the centrals. Cingules on the lingual face of the upper laterals are sometimes found in man, which is a reversion to the form found in the apes.

The canines are large and carnivorous in the apes, but are much reduced in man, and present some configurations, showing their descent and relationship. They present some ethnic peculiarities in man as well.

The bicuspid is smaller and generally has but one root in man, as compared with the apes, in which they have three roots above and two below, like the true molars. By reversion they occasionally have three roots above in man and two below.

The true molars increase in size from first to third in the apes and also in some lower races. In the higher races of man they decrease in size from front to back. The cusp patterns of the human molars have been the subject of interest to many observers on account of their seeming to illuminate in some degree the problem of man's descent. It is with difficulty that the tubercles can be studied well in lower races, as they are usually much worn and abraded by the hard usage to which the teeth are put by all savage tribes owing to the hard and gritty nature of the food employed and to their still using them as tools. Topinard found by investigating some 600 skulls of various races that the first upper molar was quadricuspid with the oblique ridge well marked in 99 per cent, so that the first molar is constant in all races. The second molar had four cusps in 66 per cent, three and one-half in 16 per cent and three in 16 per cent. It has four normal cusps in most lower races, as the Malays, Malanesians and Australians have it in about 80 per cent, while in Europeans it falls to 58 per cent. The third upper molars in all races have four cusps in 37 per cent, three and one-half in 11 per cent, three in 39 per cent, two in 5 per cent and irregular in 6 per cent. The first lower molar of all races has five cusps in 92 per cent, four and one-half

in 4 per cent and four in 10 per cent, so that it, too, retains its type strongly. The second has five cusps in 24 per cent, four and one-half in 10 per cent and four in 64 per cent. It is usually quadritubercular in the higher races, but varies to the fifth tubercle in low races, which is a simian feature. The third lower molar has five cusps in 66 per cent, four and one-half in 6 per cent and four in 31 per cent, but is very variable. Topinard concludes from his observations that the teeth of man are in process of transformation, the lower molars tending toward the quadricuspid type with a cruciform fissure and the uppers toward a tricuspid type. In the lower molars he thinks the fifth cusp tends toward the distal corner of the crown until it disappears, as the lower molars are becoming quadritubercular.

It is the disto-lingual cusp, or hypocone, that tends to disappear in the upper molars with the effect of producing the tritubercular molar. This is held by Cope to indicate that the upper molars of European races tend to revert to the trituberculate, lemurine type.

Prof. Cope said in regard to this brilliant generalization (*Am. Naturalist*, 1886, p. 941) that "The quadritubercular type of the upper molars of man belongs to the primitive form from which all the upper molars of the placental mammals have been derived, and this has itself been derived from a still earlier tritubercular crown by the addition of a cusp at the posterior internal part. Considerable significance attaches to the question as to whether the superior molars of man are to be regarded as quadritubercular or tritubercular. The lower molars are also typically either quadritubercular or quinitubercular; for in them the fifth tubercle is liable to great variation. In the nearest allies of man—the anthropoid apes—the superior true molars are all quadritubercular, although the hypocone, the disto-lingual tubercle of the third molar, is usually smaller in the chimpanzee. The lower molars are usually quinitubercular in the apes, the gorilla not infrequently adding a sixth lobe on the external posterior margin of the crown. The molars in the monkeys are usually quadritubercular—without the fifth cusp in the lowers—except in some species, as the *Pithecia* and some others, where the superior molars are tritubercular. In the lemures the third and second and sometimes the first upper molars are tritubercular in nearly all families, living and extinct. The tritubercular form is well marked in *Anaptomorphus*, that supposed ancestor of the primates from the Eocene of the West.

"So it will be seen that the reappearance of the trituberculate molar in man constitutes a reversion to the lemures and not to the anthropoid apes or monkeys proper, and among lemures the type to which it reverts is that which presents the closest resemblance to man in other parts of the dentition. The genus answering to this best is *Anaptomorphus*."

Prof. Cope examined many crania in the great museums and found the tritubercular upper molars in four out of twenty-five Slavs; seven out of twenty-three Greeks and Italians; six out of twenty-two Germans and Scandinavians; six out of eight French; twenty out of thirty Euro-Americans; nineteen out of twenty-eight Eskimos, etc. The tendency was therefore greatest in the French and Euro-Americans. The Eskimo are unique among savage tribes in the large proportion of suppressed or degenerate third molars which they exhibit.

The phylogeny of the human molar has been pretty thoroughly worked out. In tracing its evolution from the earliest form the various stages it has passed through are now well understood, and it may be mentioned in passing that these studies are well worth the exercise of our intellectual powers, since they throw light upon greater biological problems which bear upon the phylogeny of our species.

The third molar of man is not now considered to have much value as an ethnic feature on account of its erratic forms. It is so erratic in all races as to present no special features that can be said to have any racial significance. It is irregular and uncertain as to number; it is more frequently suppressed in the higher than in the lower races; but it also presents nearly all the features of irregularity in low races as to number, form and structure that are found in higher races. It begins, in fact, to decrease in form in the anthropoid apes, for the chimpanzee has third molars that are smaller than the other molars, and this tooth is missing entirely in the little marmoset monkeys of America. The fact seems to be that it is an organ that is in process of disappearance in the primates, and that it is most irregular in man and, most of all, in the higher races. There is no constancy in any race as to the ratio of its erratic habits. The nearer the apes in general structure a race may be, the larger and more functional and more constant in form and number the third molar seems to be, and more animal-like. The higher the race, the more erratic and uncertain it is, and the fewer simian features it presents. Its special anatomical features are so inconstant and unreliable as to supply no basis for generalizations. Its normal condition seems to be that it should be abnormal as compared with the other molars. We must consider that it is an organ in process of suppression, and that it is in consequence subject to vagaries of form and structure due to the efforts of nature to abort it.

**Teeth of
Fossil Men.**

To go into detail briefly as to some of the features which characterize the teeth of different races, we will notice, first, the teeth of the most ancient examples of our race that have yet been discovered—the fossil men of Europe. Their remains have been found in well identified geological horizons, so that the authenticity is undoubted and their

age immense. The latter is shown not only by the strata in which they were found, but by the degraded and animal features they exhibit, showing that they were indeed of the early varieties of our species, and that they had not yet been well differentiated from their simian ancestors. They possess the ape-like features of the teeth and jaws very strongly. The prominent superciliary ridges and glabella, the retreating forehead, the pronounced temporal ridges, the thick cranial walls, the massive zygomatic arches, the prognathous and massive jaws and mandible, the retreating chin, etc., are quite like the *quadrumana*. The large molars which increase in size from front to back, the large and functional upper third molars implanted by three distinct roots, the elongated lower molars, the fifth tubercle on all of the lower molars, the proportionately great size of the bicuspid, the heavy, long and ape-like canines, the centrals and laterals being of nearly the same width—a simian feature—all point to a low grade of development in the phylogenetic scale. Prof. Cope described these remains some years since (*Am. Naturalist*, 1893, p. 321). After dwelling upon the simian characters in the skeleton and denture exhibited in low races, he says regarding the jaws and teeth of the fossil man: "What had been long suspected is now established, that there dwelt in Europe during Paleolithic times a race of men which possessed a greater number of simianoid characteristics than any which have been discovered elsewhere. The important discovery of the skeletons in the grotto of Spy, which were nearly complete, demonstrated that the men of Neanderthall, of Constadt, and Naulette, all belonged to the same race. The superciliary ridges were more prominent than any living race, and other ape-like features were most remarkably shown. The retreating chin, like the apes, is most marked—there is really no chin at all—like the *quadrumana*. The dentition shows that the molars increase posteriorly, to the same degree as they do in the apes. The upper molars are full quadritubercular, and the hypocone, the fourth cusp, is as large as the rest in all of the crowns. The third molars have three widely divergent roots, like the other molars. The bicuspid and canines are large, relatively to the true molars. The canine exceeds in size those of the Australians of today. The lower molars are prolonged antero-posteriorly, like those of the apes, especially the orang. The transverse diameter of the crown is also contracted in the posterior half, which is unlike any living human race and resembles the apes." Summarizing altogether, he concludes that the man of Spy takes the lowest position among the known sub-species of man. The flints and implements found with the remains show that he belonged to the later Paleolithic period, but not to the still older. It will be interesting to discover the still older Paleolithic man.

Australoid Races. Among living races the Australian is the lowest and presents the most simian features. The Australoid races comprise the Australians, Tasmanians, the aboriginal tribes of India and Polynesia, and probably others. The stock is distinct and well marked, and its extent over the ancient world must have been wide.

Among other low features there is excessive prognathism, inclination of the incisors, retraction of the chin, heavy jaws, etc. The skull is dolichocephalic, and the jaws are square and prominent, partaking of the general form of the head. The teeth are large, white, coarse and square, with the minute features well marked. The teeth are macrodont, according to Flower's index. The molars do not decrease from front to back, but tend to increase in size, the third being large and functional. It is often larger than the other molars and rarely deformed or missing. The hypocone is well marked in all the upper molars, there being no tendency to trituberculism. The second lower molar has the fifth tubercle like the other lower molars, whose crowns tend to elongation. The canines are long and conical, an orang-like feature which is common to Australoid people. Supernumerary teeth, especially fourth molars, are found. In the New Caledonians and some other Australoid people the central incisors are so large and insectivora-like as to show their form through the lips. A few features, therefore, are distinctive of the Australoid type and have an ethnic value.

Negroid Races. The Negroid races include the Negroes of Africa, the Negrillos of Asia and Polynesia, and other black people not Australoids. They are dolichocephalic and usually prognathous, although some exceptions exist to the rule. Like the Australoids the entire lower face is drawn forward by the prominence of the jaws so that the third molars appear anterior to the ascending ramus of the lower jaw. The teeth are large, thick, dark colored, coarse and ape-like. The incisors project forward so that the edges meet at an angle. The chin retreats, but not so much as in the Australoids. The molars are large and wide, macrodont, and are of the same size, or increase from front to back. The third molars are large, have three distinct roots, and are full and functional. Rarely they are reduced in form or suppressed. The hypocone is present in the upper molars, and there is a tendency to the production of the fifth cusp, the hypoconule. This is sometimes found even on the third molars. Fourth molars are not uncommon. The canines are large and conical. The alveolar process is often thickened around the roots of the teeth to form prominent ridges just beyond the necks. The gums are dark or mottled,

the pigmentation of the skin extending even to the mucous surfaces. These features are quite characteristic of the Negro.

Mongoloid Races. The Mongoloid race includes the Mongolians of Asia—the Chinese, Tartars, Turks, Siberians, Eskimo, Japanese, Malays, etc. Having a brachycephalic head, there is little real prognathism, though some prominence of the jaws. The incisors are inclined forward to some extent, yet there is a well developed chin, but not so full as in Europeans, as the incisors are not yet vertical. While most Mongols are brachycephalic, the Eskimos are a notable exception, who are dolichocephalic. The jaws are rounded in relation to the brachycephalic skull. The teeth are large, with heavy, prominent tubercles and cusps. The bicuspid are large as compared with the molars. Betty says the Japanese sometimes have many cusps on the molars, meaning probably that the hypoconule or fifth cusp or cingule is not uncommon on the upper molars. We are greatly in need of closer observation of the minute characters of the teeth of the Chinese and other Mongols. The Eskimos are dolichocephalic, but have round, rather small jaws and teeth. They are unique in having the third molars more irregular than most savage tribes. The discoloration of the teeth, among some Mongols by the use of the betel nut has prevented casual observation of their natural characteristics.

Americanoid Races. The Americanoid race includes the pre-Columbian people of North and South America, south of the Eskimo belt. There is much variation among the American Indians as to head and jaw forms. Some of the low tribes are prognathous, and the higher and more advanced tribes are decidedly orthognathous, as much so as the Europeans. The teeth vary also, and are classed as mesodonts, but they vary from macrodonts to microdonts in Flower's scale. The teeth are generally large, strong, and describe a wide arch. No special features have been recorded. The third molars, Betty shows, are as erratic as in other races. The mound builders had fine teeth, which, when not much worn (as is very rare in their skulls), were large, yellow and coarsely made. The third molars were as large as the other molars. They were prognathous. Dental diseases and deformities were not uncommon among all American Indians, ancient and modern. Betty notes the lingual cingule as being present. The fifth cusp was variably present, especially in the mound builders and some ancient and low races.

Europeans are divided into two distinct types—
European Races. the light race, the Xanthochroid, and the dark or Melanochroid. The Europeans are microdont, orthognathous and mixed dolichocephalic and brachycephalic. The teeth are vertical, and both wide and narrow jaws are found.

The Xanthochroids, or light Europeans, are dolichocephalic and usually have large, light colored teeth, set in square jaws with prominent canines. They are more simian in type than the dark races. The third molars are more like the other molars; the hypocone is constant above, and the fifth tubercle on the second lower molar sometimes occurs; the fifth cusp, or hypoconule, occurs frequently on the upper first molar, and cingules on the laterals are common. The dark peoples, the Melanochroids, are of smaller stature, brachycephalic, small round jaw, small teeth, the incisors and canines much reduced; the tritubercular upper molar is common; the third molar is often suppressed and usually degenerate in form, and the simian features absent in general. In fact the Melanochroid type in Europe is the farthest from the apes and is the most degenerate. On some important branches of the Melanochroid*type, as the Egyptians, Semites and Hindoos, we lack data from careful observation. With the ancient Egyptians, as of many ancient peoples and savages, the teeth are usually so much worn as to obliterate most of the minute features.

- These few details show only what we could wish to accomplish in the way of isolating and differentiating minute anatomical features with a view of classifying them in relation to their ethnic significance. As other parts and organs of the human body have been so classified, it is not too much to ask that as much should be done for the teeth. So we return to our first proposition that it is a scientific work that should be undertaken by the dental profession, whose members are equipped in a peculiar manner for it.

Missouri State Dental Association.

One of the most successful State meetings of the year and the most successful in the history of the Missouri State Dental Association concluded its thirty-eighth annual meeting Friday night, May 23, at Jefferson City after being in session three days.

It was in evidence on every hand that the affairs of the Association were in a most flourishing condition; from the character and number of the men seeking admission; the interest manifested by the older members; the varied and interesting clinics, and the high-class, broad and intellectual papers it was apparent that under the administration of President Thorpe and his efficient colaborers the high standard set by his predecessors had

not been permitted to decline but had steadily advanced. To those who remembered the sweltering torridity of the last July meeting the change of time for holding the convention to May was a grateful relief, and no doubt the increased enthusiasm was in a large measure due to the more temperate state of the weather.

Promptly at 2 o'clock the Association was called to order by the President, Dr. Burton L. Thorpe, of St. Louis, who in a few appropriate remarks introduced Governor A. M. Dockery, chief executive of the State. Gov. Dockery, who also bears the title of M.D., delivered a brief but eloquent and hearty address of welcome to the Association, to which Dr. F. H. Achepohl, of St. Charles, responded in a very happy manner.

Following the response, President Thorpe delivered the annual address embodying the following recommendations:

That the Association hereafter alternate between St. Louis and Kansas City on account of better clinical, hotel and railroad facilities, and that more members be added to the Association.

Publishing history of Association from its organization in 1865 to present time.

That the Association endorse a bill introduced by Hon. Chas. F. Joy, of Missouri, for appointment of dentists in the navy.

The appointment of competent dentists at the State's expense for State eleemosynary and penal institutions. The president read letters from several superintendents of State institutions endorsing this need. Hon. F. M. Wooldridge, Warden of the Missouri State penitentiary, is the first head of any of the State Departments to put this idea in practice, he employing and equipping a dentist in the penitentiary at the State's expense.

Also it was recommended that steps be taken looking toward an International Congress of Dentists during the Louisiana Purchase Exposition at St. Louis in 1904. The address also brought out a historical resume of the Association's organization and early members and a tribute to its pioneers and recently deceased members.

Dr. D. R. Stubblefield, Nashville, Tenn., read a paper entitled "Metallurgy." The doctor did not attempt an exhaustive treatise on the subject, but limited his paper to two or three metals, notably silver and aluminum.

Dr. Herman Prinz, St. Louis, read a paper entitled "Some of the Newer Dental Remedies."

Dr. Wm. E. Griswold, New York, read a paper entitled "The Griswold System of Removable Bridge Work."

Dr. James W. Hull, Kansas City, read a paper entitled "Conservatism in Dentistry." The paper was essentially a plea for the exhibition

of sounder judgment and less of the slipshod methods which have come to be a travesty on the dental art.

Dr. D. F. Luckey, Missouri State Board of Agriculture, Columbia, read a paper on the "Comparative Anatomy of the Teeth."

Dr. George W. Cook, Chicago, delivered a lantern lecture, subject "Some Pathological Changes in Tissue," illustrated with exhibit of bacteriological specimens. Alveolar pyorrhea, spoken of by someone as the "*bete noir*" of dentistry, was the theme upon which the Doctor based his argument; the essayist argued along what seemed very logical and scientific lines, that this disease is due to a specific bacillus which he claims to have isolated.

Dr. J. Robert Megraw, Fayette, read a paper entitled "Dental Prescriptions," in which the essayist severely arraigned the careless manner in which the average dentist performs this part of his professional duties.

Dr. J. D. Patterson, Kansas City, read a paper entitled "Etiology of Dental Disease."

Dr. F. B. Morehead, Chicago, read a paper entitled "Alveolar Abscess, its Sequel and Surgical Treatment." After reviewing the phenomena accompanying the formation of an abscess, the Doctor gave his method of treating those obstinate forms of alveolar abscesses which do not yield after the usual exhibition of remedies in such cases. The method advocated by the essayist briefly noted consists in the surgical operations involved in reaching the sac through the gum and alveolus, removal of dead or necrosed tissue and packing cavity with aseptic gauze.

Dr. H. H. Vaughn, Kansas City, delivered a lecture on "Orthodontia."

Dr. E. P. Dameron, St. Louis, read a paper entitled "Progressive Unilateral Facial Atrophy."

The paper of Dr. Charles Gilbert Chaddock, St. Louis, was read by title, to be published in the proceedings.

Shortening the time from four to three days seemed to meet with universal approbation.

As presiding officer, President Thorpe gave evidence of rare executive ability. The dispatch with which he conducted the business of the Association, finishing as he did a program in three days which had always required four, was a revelation to those who had always thought it necessary to lose at least one day at these meetings.

The reception to members at Gubernatorial Mansion, given by the Governor and his most estimable wife, proved that the social feature of these meetings is a very popular innovation.

After the election of officers, which resulted in the selection of Dr. S. C. A. Rubey of Clinton for president for the ensuing year, it was de-

cided to hold the next annual meeting of the Association at Kansas City May 21, 22, 23, 1903.

California State Dental Society.

The thirty-first annual meeting of the California State Dental Association was held at San Francisco June 10th and continued for four days with a large attendance. President Barker of San Jose in the chair, a very excellent program being furnished.

Dr. John S. Marshall, President of the Examining Board of Army Dental Surgeons, spoke as follows:

The necessity for dental surgeons in the army is very great. In the last nine months at the Presidio 3,452 sittings were given and between five and six thousand operations performed. Three chairs are in constant use from 9 a. m. to 4 p. m. with one hour intermission at noon. A great many diseases are encountered that are peculiar to the tropical climates. Inflammatory conditions of the mouth, which he had not seen before, are apparent in the mouths of the soldiers returning from the Philippines. It is an ulcerated condition of the gums and mucus membrane of the mouth, beginning at the festoons, sweeping in both directions, following the gum line and traversing the entire mouth. The teeth become loosened, but no other evidence of what we call scurvy symptoms. Most cases have much salivary calculus and in treating these lesions of the mouth dysentery and diarrhoea are cured in weeks that required months without treating the oral cavity. The government furnishes material for plastic fillings, the patient having to pay for gold. The outfit of the Army Dental Surgeon is as complete as that of a dentist in private practice.

Thursday, June 12, the Association banqueted at the Cliff House.

The following officers were elected for the ensuing year:

President, Frank L. Platt, San Francisco; First Vice-President, Leander Van Orden, San Francisco; Second Vice-President, W. J. Taylor, Sacramento; Third Vice-President, W. A. Knowles, San Francisco; Recording Secretary, C. E. Post, San Francisco; Corresponding Secretary, O. P. Roller, Los Angeles; Treasurer, Thos. N. Iglehar, San Francisco.

O. P. ROLLER, Secretary.



New Jersey State Dental Society.

Thirty-Second Annual Meeting, Asbury Park, N. J., July 16, 17 and 18, 1902.

Morning Session, July 16, 1902.

President Fish called the meeting to order. The Secretary called the roll. Vice-President Hindle took the chair, and introduced President Fish, who read his annual address.

Discussion of President's Address.

The president refers to the wonderful progress that has been made. Are we as dentists keeping pace with the progress in other departments? In some respects we are. Forty years ago any man who thought himself qualified to enter the dental profession could do so, and hang his sign as high and as broad as he pleased, and there was no one to say him nay. Today he must have an education, he must be a graduate of a reputable college. More than that he must pass before our watchful board of examiners before he can enter our ranks. That is progress. We are filling teeth today with about the same material as our fathers used—gold, amalgam, cement; are we saving teeth any better than our fathers did? Not very much. We need someone today who will produce a cement that will last in the tooth. When we get that we shall have made progress.

Let me refer for a moment to two or three who have passed away. The old members of the profession who have done so much to make dentistry what it is are leaving this world very rapidly. Many of them have passed away during the last year. We, as Jersey men, owe very much to the memory of A. W. Kingsley, who had the very high honor to be twice president of this society, the only one who ever attained that distinction. He was worthy of it. Whoever in the future hears the

name of A. W. Kingsley will recognize the fact that he was a true man, that he was a good dentist. While kind and gentle, when the time came he was firm. No man better than Dr. Kingsley deserves the titles true and honorable.

Although not members of our Society two others have passed away whose lives have added greatly to dentistry. One of these was Benjamin Lord, and I think of him especially because Benjamin Lord was born in New Jersey, and New Jersey always had a very warm place in his heart. Benjamin Lord was one of the men of whom dentistry can be proud. He never did anything but what was honorable in all his life, and he did everything he could to elevate and honor dentistry. To such men we owe what little tribute we can pay here today.

Then there was another gentleman whose name is a household word, and who did great work for dentistry. The aim of his life was to elevate the profession and make it honorable; anything that was small or low or mean was contemptible in his sight. I refer to Dr. Hill of Brooklyn. No more honorable man ever lived or practiced dentistry, and I feel, Gentlemen, that it is fitting I should pay tribute to these men, whom I had the honor of knowing so well. (Loud applause.)

The President has referred to the suit which **Dr. J. Allen Osmun.** was brought in our State for the illegal practicing of dentistry. I will not speak of that now, for I shall present a report tomorrow night from the Board of Examiners, and then perhaps will have something to say upon the subject.

The President has also referred to the duties which the prosecutors appointed by the Society owe to the profession. I want to emphasize that point. Every member of this Society, whether he is a prosecutor, a private citizen, or a high private in the rear ranks, if he will do his duty will help us soon to have things in such a shape that there will not be any illegal practitioner in the dental profession throughout the whole State of New Jersey. (Applause.) Why should there be any illegal practitioners? The matter rests with us. If the State Board has the loyal support of every member of the Society there will be no illegal practitioners.

I am very pleased, Mr. President, to be here **Dr. B. F. Luckey.** today and listen to the President's address. It is a matter of pride to myself and many others that New Jersey can produce young men who can take their positions as leaders among professional men, and acquit themselves as well and as thoroughly as did Dr. Fish this morning.

The remarks of Dr. Stockton were most interesting, and Dr. Osmun rounded up and finished all that could possibly be said upon the subject

by calling your attention to the fact that New Jersey stands more determined than ever to maintain the dignity of our profession, and its position before the world, and how, by the prompt and efficient enforcement of our laws we can stand not only with, but above and beyond and in front of all other societies in the world. (Applause.)

I do not remember in the many years that I have
Dr. George E. Adams. been connected with this Society, an annual address which has been so well prepared and in which so many good points have been taken up and thoroughly ventilated, as in the one to which we have listened today, and I think we should all feel proud of it and of its author.

The address of Dr. Fish emphasizes one peculiarity of our Association, which makes it different from any other Society in the country, and that is the fact of the progression of its members towards its highest office. Many of you will remember when Dr. Fish came into this Society; he became a member of one of the smaller committees, and the next year went on one of more importance, and so went on, step by step, until he reached the position of chairman of the Exhibit Committee, and then, as a natural sequence, he became Vice-President, and then, according to the unwritten law of our Society, he was elected President. I believe the feature to which I have referred is an important factor in the success of our Society. We are raising up a body of men to work, not only for the good of the profession, but for Society at large, and they know the reward which they may receive. The position is ready for every one who is willing to work, and throughout all our thirty-two years of existence we have had good and willing workers.

I go among different societies throughout the country, and I see the same men elected to the presidency or placed on important committees year after year, so that other members of the Society are stimulated but little to work for its advancement. I believe we are doing absolutely the right thing by following our method of rotation in office.

There is one thing I want to emphasize, and
President Fish. that is that the younger members, who form perhaps a majority of this society, should take more part than they do in the debates.

We are going to have some excellent papers read before us, and doubtless we have much undeveloped material here which could be utilized. We all have ideas; let us express them. A young man can never gain confidence or reach the highest pedestal of fame in dental matters in New Jersey unless he takes part in the debates. He may be a good, quiet worker, but by taking part in the debates, he will advance

far more rapidly. There is as great a field today for the younger members of the profession as there was twenty-five years ago; perhaps more, because the young men rule the world today. I would like to see the young men take part in this meeting, and let our thirty-second session go down as the young men's meeting. We look to our elders for advice and guidance, but we have young men who can discuss the papers intelligently, and it will give me a great deal of pleasure to call on them. (Loud applause.)

President Fish resumed the chair.

The membership committee reported the following applications: Dr. C. E. C. Smith, Newark, N. J.; sponsors, Drs. Luckey, Gregory and Holden. Dr. Franklin Rightmire, Paterson, N. J.; sponsors, Drs. Pruden, Luckey and Dunning. Dr. Frederick C. McLane, Paterson, N. J.; sponsors, Drs. Holden, Pruden and Luckey. Dr. C. F. Alfred Hane, Jersey City, N. J.; sponsors, Drs. Stockton, Marshall and Meeker. Dr. Seymour St. J. Boughton, Newark, N. J.; sponsors, Drs. Gould, Stockton and Marshall. Dr. Edwin W. Harlan, Jersey City, N. J.; sponsors, Drs. Stockton and Marshall. Dr. I. W. Claypoole, Paterson, N. J.; sponsors, Drs. Marshall, Stockton and Gould. Dr. Edwin F. Taylor, Newark, N. J.; sponsors, Drs. Stockton and Marshall. Dr. Frank Crowther, Perth Amboy, N. J.; sponsors, Drs. Holden, Meeker and Pruden. Dr. L. Graves Osmun, Newark, N. J.; sponsors, Drs. Luckey, Osmun and Stockton. On motion the above applications were referred to the Committee on Membership.

Mr. President, at the twenty-second annual dinner of the Central Dental Association of Northern New Jersey, held on the 15th of February last, the Borine Company presented each member and guest with a beautiful pocket knife, accepting therefor one cent. Those cents were placed in the hands of a skilful artificer, and he has wrought that which I hold in my hand, and I am desired by the Borine Company to present this gavel to the society.

(The gavel referred to was a handsome hardwood gavel, upon the handle and head of which were set the cents received by the Borine Company on the occasion referred to by Dr. Stockton.)

I do so, Mr. President, with great pleasure. I might say, in passing, that the Borine Company has never exhibited its sense (cents) to more advantage than now. (Laughter and applause.) I also want to request that you and your successors will please use this gavel with great good sense (laughter), and when at any time you or they feel inclined to call some of us down who are on our feet too long you will exercise equal good sense in being lenient. (Renewed laughter.)

It affords me great pleasure to present this gavel to this society, with the best wishes of the Borine Company for the health, prosperity and welfare of the President and every member of this society. (Loud applause.)

It affords me unbounded pleasure to receive this
President Fish. gavel in behalf of the New Jersey State Dental Society. When I realize the sentiment which prompted the gift, and the originality displayed in the conception of it, I certainly appreciate it, and I can assure Dr. Stockton that myself and my successors will never use it unworthily. This is one of the most unique and novel conceptions of a gavel ever created. Some of those pennies are from men who in a short time will pass beyond, possibly one may have come from a member who has already gone, and we will keep it and cherish it, together with the memories which surround it, as well as in appreciation of the act of one of our exhibitors, to whom we are indebted.

(At the request of Treasurer Hull a motion was adopted whereby Drs. Riley, Chase and Luckey were appointed a committee to audit the Treasurer's accounts.)

On motion adjourned until eight o'clock p. m.

Evening Session, July 16, 1902.

President Fish called the meeting to order.

The Secretary called the roll.

The President then introduced G. Lenox Curtis, M.D., of New York City, who read a paper entitled "Electric Ozonation in Neuralgia."

At the conclusion of this paper, Dr. Curtis demonstrated his high-tension electrical apparatus, which was very interesting and instructive. He applied it to several of those present, and in several instances appeared to be able to locate deep-seated congestions in those upon whom the electrode was placed.

Dr. Curtis claimed this test as proof that the current could be passed into and through the body.

Discussion of Dr. Curtis's Paper.

I have had the pleasure of seeing and examining the blood of a large number of cases which Dr. Curtis has treated by this method. They included almost all classes of diseases. I have many microphotographs of these blood examinations, which show the changes the blood had undergone. As the patient's health improved, the blood also rapidly approached normal. I have watched a large number of these patients recover their health. This method of treatment seems to be based on rational lines,

and results are secured by it which medicine fails to give. I have never seen more active, beneficial change in the blood under any other treatment. I will allude to a few cases.

In one case, seventeen days after treatment, I was able to make a photograph of the blood which showed an increase in the red corpuscles of 1,500,000, and a reduction of 44,000 in the number of leucocytes. The hemoglobin was 65 per cent. The patient had so far recovered that she was able to be around the hospital. She was dismissed cured within one month. One month later, without further treatment, I made a photograph which showed that the hemoglobin had increased to 88 per cent, while the red corpuscles and leucocytes were normal. The patient had apparently fully recovered her health.

In another case I made examinations of the blood of a patient suffering from paresis. His condition was critical. Apoplexy was expected at any time. Patient was disqualified for business and was constantly under the surveillance of an attendant. Dr. Curtis tells me that the patient was materially improved in less than one month's treatment and had so far recovered that the predominating symptoms were absent and the patient able to resume business unattended. A photograph shows about 65 per cent of red corpuscles and embollic fibrine. The bunching of the cells was peculiar to apoplexy. I examined the patient's blood four months later and found it in almost a normal condition. I saw the patient eight months later—he told me he had been in perfect health since his last visit to me, and had been very actively engaged in business. While the patient looked to be in excellent health, his blood distinctly showed signs of decline. There were only 80 per cent of red blood cells and long skeins of fibrine were to be seen.

Dr. Wilcox.

Are there any cases in which you have failed to secure relief?

Dr. Curtis.

Relief was secured in all cases of neuralgia, and in many other diseases treated by this method.

In a case of spinal sclerosis, which had resisted four years' treatment by several of our eminent neurologists, I was equally unsuccessful, although the general health of the patient was much better. But his power of locomotion remained unchanged.

But in other cases of paralysis, most gratifying results had been secured.

Dr. Goldsmith.

What relation does electric ozonation bear to the therapeutic treatment by X-Ray?

Dr. Curtis.

The effect of these two methods is similar, but owing to the low voltage of X-Ray and small amount of ozone produced by it the results are obtained much more slowly. With this apparatus

the ultra-violet ray is secured, which acts more quickly on surface disease, such as lupus, than the X-Ray does. Ozone as forced by this device directly into the tissue produces rapid oxidation. There is a reproduction of the tissue and there is little or no scar following the treatment as is usual with the X-Ray. The danger of burning is entirely eliminated by this method.

Dr. Cruman. Have you tried this method in destroying bacterial cultures?

Dr. Curtis. No, but I have demonstrated its efficacy in many cases where germ life was present, such as in tuberculosis; the bacilli streptococci, and staphylococci are gradually diminished until none are to be found. The bacilli, which is the generally accepted proof of the presence of the disease, disappear long before the disease is cured, they being the results, and not the cause, of tuberculosis. The presence of tuberculosis, however, may be detected long before any of the usual clinical symptoms are manifested, and long after clinical signs disappear.

I have observed the effect of this treatment in over seventy cases, in all stages of the disease, and have obtained 94 per cent of cures. I consider it the most effective treatment for this dreadful affection.

In many of these cases, one or more lobes of the lung were consolidated. The treatment seems to dissolve the tuberculous debris which plugged the cells, and the lung is restored to full use. The patient's health is so completely re-established that not even tuberculous matter is found in the blood.

This treatment is speedy and most effective in the treatment of such affections as gonorrhoea, chancroid, ring-worm, lupus and septicemia.

From the fact that but a few treatments are necessary to cure chancroid and gonorrhoea, I infer that it must be deadly in most, if not all, bacterial affections.

Dr. B. F. Luckey. What would be its effect in the treatment of alveolar abscess, or in incipient irritation, or inflammation of the membranes, or of the gums?

Dr. Curtis. I have not tried it with a view of curing an alveolar abscess. But I have used it to stimulate the wound after an operation for the removal of the abscess, and amputation of the roots. In these cases, the pain and tenderness quickly disappear, and the wounds appear to heal more rapidly than in other cases, where I have not employed it.

Last week, one of the gentlemen present referred a patient to me, suffering from a congested pulp in a central incisor. The tooth was tender on pressure, and the pain severe. In five minutes treatment the

pain disappeared, and in twenty minutes much of the soreness was gone, and I am told it has not returned.

It will be interesting to follow this case and observe the effect of the ozonation. In such cases I believe the pulp usually dies.

I have, however, by this method observed complete restoration in small abscesses in other parts of the body. I should think it might arrest an incipient abscess, as it does congestion of the brain or lungs.

Dr. Luckey.

In what field of dentistry would you suggest that this method be successfully applied?

Dr. Curtis.

It is especially applicable in the relief of pain, inflammatory conditions, adonitis, cellulitis, and bursitis. I have found it more effectual than surgery in the latter.

The subject of the blood has probably been less generally studied than any department of medicine. It seems to me to be the most important, for in the blood may be found the elements of all diseases. This method of diagnosing disease is scientific, it expels all doubt of the existence of a disease and brings to light remote causes so often overlooked and enables the physician to properly prescribe medicine. The examination of the blood is the only satisfactory pre and post clinical method for determining the presence of disease. The advantage of this knowledge cannot be overestimated. It prompts the physician when to begin and when to stop treatment.

In the absence of the author, Dr. Stoekton read Dr. Thompson's paper.

On motion the discussion of Dr. Thompson's paper was postponed.

The following applications for membership were received: Dr. E. E. Bower, Camden, N. J.; sponsors, Drs. Duffield, Meeker and Fish. Dr. G. W. Baxter, Newark, N. J.; sponsors, Drs. Meeker, Osmun and Holbrook. Dr. S. I. Callahan, Woodstown, N. J.; sponsors, Drs. Peck, Jacqueline and Duffield. Dr. W. H. Gelston, Camden, N. J.; sponsors, Drs. Duffield, Meeker and Fish. Dr. Samuel S. Haines, Moorestown, N. J.; sponsors, Drs. Dilts, Hawke and Duffield. Dr. F. K. Hazelton, Newark, N. J.; sponsors, Drs. Duffield, Meeker and Dunning. Dr. Cromwell Ironsides, Camden, N. J.; sponsors, Drs. Duffield, Meeker and Dunning. Dr. William Kester, Bordentown, N. J.; sponsors, Drs. Duffield, Meeker and Fish. Dr. H. C. Keller, Tuckerton, N. J.; sponsors, Drs. Duffield, Meeker and Fish. Dr. F. H. Tomlin, Haddonfield, N. J.; sponsors, Drs. Duffield, Meeker and Fish. Dr. A. K. Woods, Camden, N. J.; sponsors, Drs. Duffield, Fish and Meeker. Dr. W. C. Richman, Newark, N. J.; sponsors, Drs. Fish, Meeker and Holbrook. Dr. Sylvester L. Nestor,

Newark, N. J.; sponsors, Drs. Dunning, Riley and Marshall. Dr. Marcus Strausburg, Newark, N. J.; sponsors, Drs. Meeker, Sutphen and Duffield. On motion the above applications were referred to the Committee on Membership.

Secretary Meeker then read the following communication:

"To the New Jersey State Dental Society.

"Mr. President and Fellow Members: Since my resignation from college work and my retirement from practice, circumstances have so changed my lifelong ethical relations with dentistry into those so purely commercial, that I feel constrained to ask your permission to tender my resignation of the honorary membership you so kindly bestowed upon me.

"I wish also to assure you that at the time of its bestowal it was accepted by me with a full recognition of its value, and with most grateful appreciation.

"Wishing you a long continuance of your excellent service to dentistry, I remain, as always, sincerely your friend,

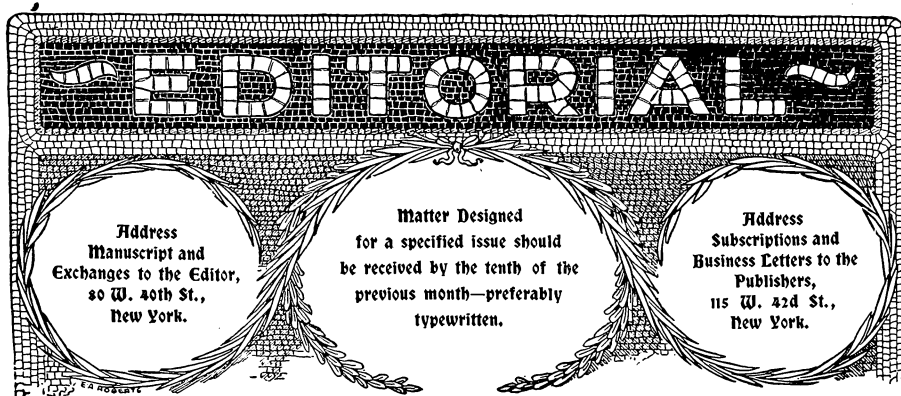
"J. FOSTER FLAGG.."

July 12, 1902.

(On motion the resignation of Dr. Flagg was accepted.)

On motion adjourned to Thursday, July 17, 1902, at 9 o'clock a. m.





The Patent Bill Favorably Reported in Congress.

Our readers are somewhat familiar with the efforts that have been made to obtain the passage of a measure through Congress, which would restrict the further granting of that class of patents which have proven a burden to the dentists of this country for so many years, yet it may not be out of place at this time to briefly rehearse the facts.

Probably the beginning of the trouble was the **The Rubber Company.** granting of certain patents, nearly half a century ago, generally known to dentists as the Rubber Company patents. These covered a method of attaching artificial teeth to a vulcanite rubber base, and the owners of these patents, discovering that they had nothing tangible for sale, resorted to vending what was termed "office rights," which in effect were licenses under which those purchasing the same might make artificial dentures by the methods which the company had protected by patents.

Many, to avoid litigation, took out these licenses, but the great body of dentists resisted the company and refused to pay for the privilege of practicing their patented methods. The Rubber Company, finding that their revenues were disproportionate to their expectations, adopted a system of spying upon the members of the dental profession, and whenever, by this means, a dentist was found to be making sets of teeth on rubber he was haled into court and prosecuted for infringement. In

spite of this sort of persecution, however, the dental profession as a whole, never receded from their position that no such patents should prevent them from doing that which was best for their patients, and the result was that throughout the entire life of the patent the warfare was maintained between the practitioners and the Rubber Company, one reputable dentist indeed finally killing an agent of the company who had hounded him beyond all endurance.

Almost from the ashes of the Rubber Company, as **The Crown Company.** it were, Phoenix-like the International Tooth Crown Company arose, a body of men who purchased numerous patents on methods of making crowns and bridges, and, pursuing the same tactics as had been adopted by its predecessor, proceeded in an endeavor to obtain money from the dental profession in the guise of office rights or license fees. Again the profession resisted, and it should be a significant fact to those who hold that the patent system is wholly beneficent that a body of men of the intellectual stamp and social position held by the dental profession of the United States should for nearly half a century persistently resent one phase of patent law. History repeated itself, and once more throughout the entire life of the Crown Company's principal patents the dental profession fought against the principle of paying a license for the privilege of practicing dentistry, but this time the dentists were united under the name of the Dental Protective Association. Thousands of dollars have been spent in litigation, and the Crown Company has been successfully resisted. But absolutely nothing was gained by this means in the way of establishing the precedent which was so urgently desired by all American dentists, the principle being that after spending years in study and after passing various rigid examinations, upon receiving a license to practice the dentist should be free to do so unhindered by the patent laws of his country. It is likewise in the interest of the whole community that any licensed dentist, a dentist thus attested by law to be competent, should be able to render the very best services required of him.

It was with this end in view that the New **The Patent Bill.** York State Dental Society five years ago appointed a committee with instructions to endeavor to have the patent laws amended. This committee consulted with other

State dental societies throughout the country, with the result that every such organization indorsed the movement and contributed towards its fulfilment.

The passage of a bill through Congress, however, is no simple matter, especially one in which there is no politics, and more particularly one affecting the patent laws, a set of statutes as jealously guarded as the most sacred religion. Thus the bill has been buffeted about the committee pigeon holes during two Congresses, and it was only since our committee was fortunate enough, through Dr. Emory A. Bryant of Washington, to interest the Hon. Geo. W. Taylor of Alabama in the bill, that any real progress has been made. Mr. Taylor apparently grasped the true righteousness of our cause from the first, and has been indefatigable in working for the measure. One after the other he interviewed the many members of the Patent Committee of the House, in the end arousing them to take sufficient interest in the bill to grant a hearing to our committee, and subsequently a second hearing in order to further discuss several minor points that seemed of doubtful nature to the Congressmen. Eventually, with only slight alteration in phraseology, but embodying absolutely the principle sought by the dental profession, the bill received a favorable and unanimous report, with the result that it is now on the calendar for passage during the next session.

The committee having charge of the bill having reported this favorable condition of affairs to the National Dental Association at its recent convention at Niagara Falls, the following resolution was unanimously adopted:

Whereas, The National Dental Association, the representative body of American dentists, being interested in House Bill No. 12451, introduced by Mr. Geo. W. Taylor of Alabama, and recognizing the able, zealous and untiring labor which the Hon. Mr. Taylor has expended in gaining the unanimous approval of the bill by the Patent Committee of the House of Representatives;

Resolved, That the National Dental Association extends its heartfelt thanks to the Hon. Geo. W. Taylor of Alabama.

The above is a slight but very fitting recognition of the services rendered by Mr. Taylor, but in view of the fact that Mr. Taylor is a candidate for re-election during the coming elections there is an opportunity for the dentists of Alabama to show their appreciation of Mr. Taylor's services in a practical way by working for his return to Congress.

Moreover it becomes their duty to do this, irrespective of party affiliations; a duty to themselves as well as to the dentists of the country, all of whom must feel that the presence of Mr. Taylor in Congress will be an urgent need until the Patent Bill becomes a law.

The National Association also passed the following resolution:

Whereas, Thirty-six State dental societies having indorsed an appeal to the Congress of the United States for an amendment to the Patent laws prohibiting the granting of an objectionable class of process patents relating to dental practice; and,

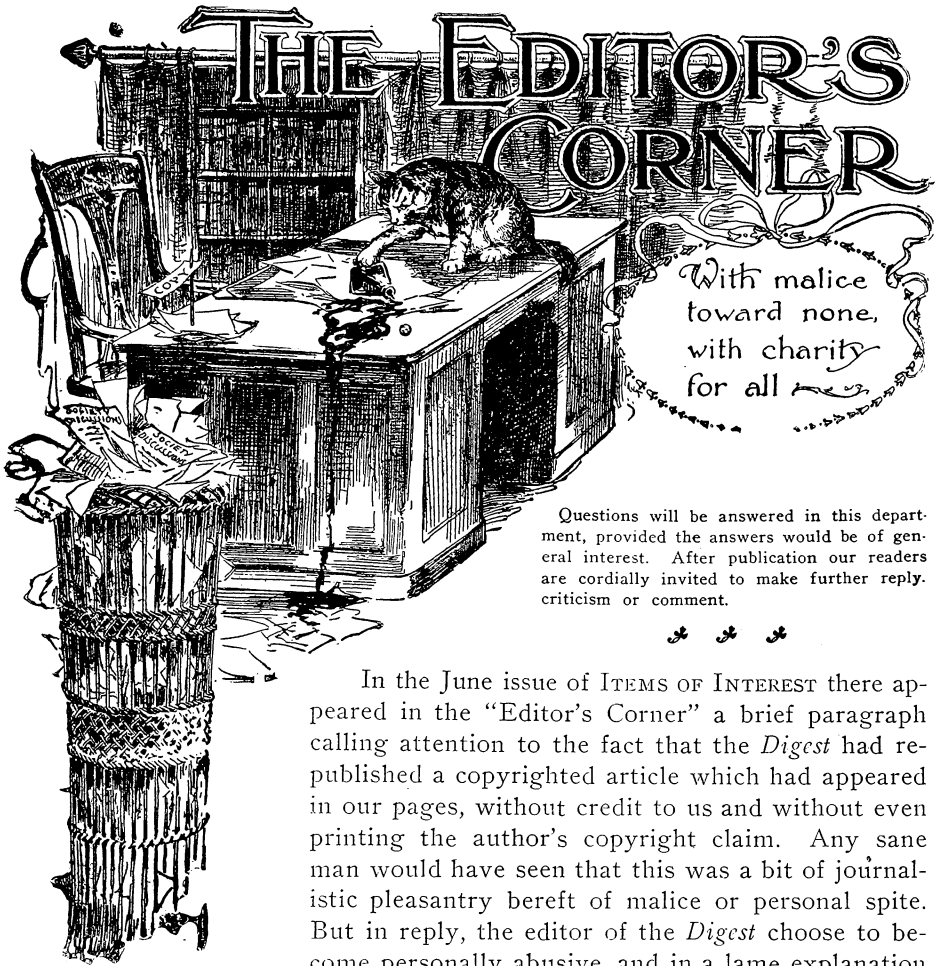
Whereas, Upon such indorsement the New York State Dental Society having delegated Dr. R. Ottolengui a committee to further such legislation; and,

Whereas, Dr. Ottolengui acting as such committee, and as the representative of numerous other societies who contributed financially for this cause, and, with the assistance of Dr. Emory A. Bryant, having introduced such a bill, and having thus far obtained the unanimous favorable report on this bill from the House Committee on Patents;

Resolved, That the National Dental Association indorses House Bill No. 12451 and urges its immediate passage by Congress; and,

Resolved, That this association appoints as a committee to further this legislation, Dr. R. Ottolengui of New York, Dr. Emory A. Bryant and Dr. M. F. Finlay of Washington, D. C.





In the June issue of *ITEMS OF INTEREST* there appeared in the "Editor's Corner" a brief paragraph calling attention to the fact that the *Digest* had republished a copyrighted article which had appeared in our pages, without credit to us and without even printing the author's copyright claim. Any sane man would have seen that this was a bit of journalistic pleasantry bereft of malice or personal spite. But in reply, the editor of the *Digest* choose to become personally abusive, and in a lame explanation alluded to Dr. Ottolengui as "blinded by conceit."

In our August number we recited the real facts in the case in so unanswerable a manner that apparently no recourse was left the *Digest's* editor except to waive argument and in an offensive editorial accuse Dr. Ottolengui of lying.

Before taking up the serious side of this, there is one point too amusing to overlook. The *Digest* says that Dr. Ottolengui is "so blinded by conceit that he imagines the whole dental world revolves around him and his journal." Only eight lines further the pub-

**The Editor of the
Digest Convicted.**

lishers of ITEMS OF INTEREST are told that they should not allow Dr. Ottolengui so much space to explain a joke, "on even so *important* a journal as the *Digest*." Important to whom? Presumably this is a classic example of journalistic modesty.

Next Dr. Ottolengui is scored because of the following language, clipped from our August issue: "At the National meeting Dr. Crouse, member of the Executive Committee, obtained the publication of the proceedings for Dr. Crouse, editor." That Dr. Crouse was an officer of the National Association at the time is denied, and the belief is expressed that Dr. Ottolengui knew this when writing the editorial. Dr. Ottolengui regrets having made a misstatement, but did not know that at the time Dr. Crouse had ceased to be an officer of the Association and he is cheerfully and publicly willing to make the *amende honorable*.

But it does not appear that Dr. Crouse objects to being accused of having been "a member of the Executive Committee," but rather that he resents the imputation that he obtained the publication of the National proceedings through political influence. Indeed he tells us that he did not "need to exert any 'political pull' to get papers, as the best societies of this country today have voluntarily chosen the *Digest* to represent them." Why not print some of the papers from these "best societies," instead of clipping "Mr. Dooley's" stuff from the *Chicago American*?

Presumably what Dr. Crouse desires us to believe, is that his magazine has reached such heights, that "important societies" are eager to publish in its pages, and that his procurement of the National proceedings without "political pull" was a purely spontaneous demand from that organization. One can almost imagine the joy exhibited, and hear the outburst of applause which greeted the announcement at the National meeting that the *Digest* would condescend to give space to its proceedings within its much sought after pages, and all without "political pull." Well, if any reader of the *Digest* believes that, his calm and blissful ignorance should be permitted to rest undisturbed, but Oh! how lonesome he must be.

Bereft of useless verbiage the following are the facts:

We stated that the *Digest* had used an article from our pages without credit, and without appending the author's copyright claim.

The *Digest* in reply claimed simultaneous publication, because both magazines appeared in March, and also declared that the matter had been voted to both journals by the Vermont Society.

In reply we published correspondence showing that the *Digest* had surrendered the paper to us after our refusal to publish simultaneously, and we called attention to the fact that the March issue of the *Digest* appeared weeks after our March issue, and asked Dr. Crouse to account for

the use of our box headlines, if he really had not republished from our pages.

These facts being unanswerable, the *Digest* evades them, and resorts to a villification of Dr. Ottolengui, a course so dignified that "important societies" will more than ever be anxious to "have the *Digest* represent them." Then follows a report of an incident at Asbury Park, the *Digest* quoting from a discussion of a paper by Dr. Ottolengui, the purpose being to show that one other man besides Dr. Crouse thinks that Dr. Ottolengui is a liar. And it is right here that the editor of the *Digest* convicts himself.

Be it remembered that the original accusation, though made entirely without malice, pointed out that the *Digest* is careless of the rights of other journals in relation to matter intended for publication.

Yet the *Digest*, in its endeavor to revile Dr. Ottolengui, unhesitatingly publishes what it brazenly states to be "the stenographer's notes," of a discussion before the New Jersey State Society.

ITEMS OF INTEREST holds a contract for the exclusive publication of the proceedings of the New Jersey State Society. In a previous similar case of unauthorized publication of its matter, the New Jersey Society appealed to the courts, and the Court decided that unpublished reports of society proceedings is property within the meaning of the law, and that any unwarranted or unsanctioned publication of such matter is a breach of the law and of the rights of the society. Since the appearance of the August number of the *Digest*, the officers of the New Jersey State Society have declared that the publication of the alleged "stenographer's report" was made without their sanction and that they did not furnish copy to the *Digest*. The stenographer makes similar denial. Of course it is not difficult to guess how the matter was obtained, but it suffices that the *Digest* did not procure it from anyone having the legal right to authorize the publication of that which the Court has declared to be the property of the New Jersey State Society, and which by contract had become the property of ITEMS OF INTEREST.

Thus is the editor of the *Digest* convicted of appropriating the literary property of another journal. But this is not all. Somewhere between the stenographer's office where it was originally written out and the publication office of the *Digest*, alterations in the stenographer's report have been made so as to aid the *Digest* in accusing Dr. Ottolengui of lying.

Dr. Ottolengui had read a paper advocating the use of gold in children's teeth, and according to the stenographer's report, Dr. Kingsley in discussing the paper said:

"I cannot help calling to mind that Dr. Ottolengui's memory is very poor. (Laughter.) I know of a *patient*, ten or twelve years of age, or

under, for whom he put into sixth year molars the very amalgam which he now decries and which he says he forgets he ever did."

In closing the discussion Dr. Ottolengui replied to this as follows:

"Dr. Kingsley said he remembers a patient, whom I have forgotten, a patient for whom I put in an amalgam filling. As I have forgotten the child, I do not know whether it was an 'initial cavity,' but as Dr. Kingsley does remember the case, it must have been one of Dr. Kingsley's patients, and it is very likely the tooth was so filled under Dr. Kingsley's direction, and that was Dr. Kingsley's practice and not mine."

Both Dr. Kingsley's statement and Dr. Ottolengui's reply were accepted as *badinage*, an exchange of friendly pleasantries. Probably no one present suspected that Dr. Kingsley was actually accusing Dr. Ottolengui of lying, as the *Digest* would have it appear. But note that the paragraph as reported in the *Digest* has been altered. Instead of Dr. Kingsley's remembering "a patient," a patient easily accounted for by Dr. Ottolengui, the language has been altered to read "many patients," an accusatory statement, which seemingly serves the purposes of the *Digest* better.

And here we drop the discussion. To our first statement the *Digest* screeched "you are conceited;" to the second "you are a liar." There seems no reply left for the *Digest* except to cry "thief" or "murderer," but even so, we have done. It is too old a trick for a publication of limited circulation to foment controversies with those of larger, for the advertisement that may be obtained.

We have heretofore pointed out the inestimable value to the dentist of keeping accurate records of his work, with the aid of some one of the many chart systems now procurable. The diagrams of the various teeth printed in the form of dental charts of the mouth, are familiar to all, but probably the majority of practitioners who have used them have felt the need of some simple means of designating the difference between gold and amalgam when recording the locations of fillings. Dr. T. O. Olliver has recently placed on the market a special preparation for this purpose. He furnishes a box containing two styles of paste, one producing a gold color, to be used for the gold fillings, the other a silver, for amalgam. By adopting Dr. Olliver's method, the chart shows at a glance the exact location and material used in fillings, without the tiresome need of studying cabalistic signs, as has been the resort in the old way.

**Items of Interest
Sustained in
Illinois Court.**

In July, 1899, we stirred up a tempest, some called it a tempest in a tea-pot, when we published an article entitled, "Facts About the Disgraceful Issuing of Degrees and Licenses in the State of Illinois." In some quarters we were accused of sen-

sationalism, a polite name for "yellow journalism;" indeed some were impolite enough to use the latter term. Others said we had published without investigation; to these we exhibited the documentary evidence which for months we had been collecting, and they were silenced. Still others declared that even if true the charges should not have been printed because of the effect abroad; but as it resulted the "effect abroad" was most salutary. The German Government was aroused; the American Consul in Germany gave the matter his individual attention, and at last the dental profession in the State of Illinois was awakened and a general house cleaning was begun. First the Board of examiners was reorganized and regenerated by the dropping of its worst member, now under indictment and awaiting trial for misconduct in office. Recently the new Board refused a license to a "graduate" of Huxmann's German-American College, declaring said College not to be "reputable." The candidate for the license appealed to the courts for a writ of mandamus to compel the Dental Board to give him a license, and after a full hearing the Supreme Court has denied the application and has handed down an opinion which will serve as a precedent in relation to many points in connection with Dental Boards and their powers. The full text of the Court's opinion need not be here given, but a few pertinent extracts may be made as instructive. The chief accusation made in our original article, to the effect that the German-American College had been unduly favored by the Illinois Board is fully sustained in the following passages from the Court's decision:

"The evidence shows that in matriculating students Dr. Huxmann did not always observe the conditions prescribed in the rules and regulations of the Board. If the testimony of some of the witnesses may be believed, Dr. Huxmann promised speedy graduation, contrary to the printed requirements of his College, as well as those of the Board, and during an examination by the State Board he furnished answers to questions to his students in advance. The evidence shows that part of the time for the past ten years Dr. Huxmann was himself a member of the Board and was closely associated with the members of the Board, and a part of that time was translator for the Board of the examination papers of the students from his own College; that he continuously sought and availed himself of advantages and privileges not accorded to other colleges, in direct violation of the rules of the Board. Whether these concessions were the result of sinister influence, or the unsolicited favors of the generous Board, we are left to conjecture. They were at least illegal and unjust.

* * * * *

"In the recitals of the agreement of June 18, 1900, between the Board and the College, granting the German-American Dental College the right to adopt a college course of one-half the duration required of other dental colleges, it appears that the question as to whether the Board had recog-

nized the College as reputable was in dispute. It is true that the resolution offered by one J. H. Smyser, when a member of the Board, and now under indictment for the gravest offences committed in the discharge of his duty, was passed, providing that, "in compliance with the laws of the State of Illinois, and in compliance with the rules and regulations governing the Board of Dental Examiners, as published in a report to the Governor for 1899, the diplomas of the German-American Dental College will be recognized." But the form and meaning of this resolution were at once questioned, and August 12, 1901, by a unanimous vote of the Board, this resolution was rescinded and a substitute was passed, providing for recognition of the German-American Dental College only upon compliance with the general rules and regulations of the Board then in force. This resolution also provided that the Board accept a consecutive course of study of eighteen months at the German-American Dental College as equivalent to a full three years' course of study in the English-speaking schools, which was in direct violation of the general rules and regulations then in force.

"It will be seen that through influences not fully disclosed by the evidence the German-American Dental College frequently sought for and obtained special privileges from the Board, that it was a constant source of trouble, and that its standing as a reputable college was continually in dispute. If compliance with the rules and regulations of the Board be the test, the evidence fails to show that said College was ever at any time entitled to recognition. In this connection I may say, that the agreement of June 18, 1900, giving to said College the right to adopt a college course one-half the duration required of all other dental colleges, which conferred upon it a special privilege not granted to other colleges, was in direct conflict with the general rules of the Board on that subject (which the Court holds to be the measure and limit of the Board's discretion), was manifestly entered into not for the benefit of the public, but for the private benefit of the College, and was therefore null and void. Likewise, that portion of the resolution of August 12, 1901, above referred to, conferring a special privilege as to the time of study so far as it seeks to exempt the College from the operation of the general rules and regulations of the Board, is held to be a clear abuse of the discretion of the Board, and absolutely void, and the German-American Dental College, the illegal beneficiary of the special privilege thereby conferred, cannot receive any benefit therefrom. All other similar acts from said Board must be held for naught. Where the Board, whether actuated by proper or improper considerations in the exercise of its discretion, by rule, resolution, agreement, contract or other action, exempts any college from the operation of its general rules and regulations, such action must be held a clear abuse of its discretion and therefore void."

In a great many State dental laws, the Boards
Power of Dental of Examiners are authorized to take into considera-
Boards Judicial. tion the reputability of colleges granting diplomas,
prior to granting licenses to holders of such diplomas.

This is a power which is desired by nearly all Boards, and it would be well therefore for committees or others asking for dental statutes to

study the language of such laws as have already been sustained in this respect. One of the first of these was the decision of the California Courts that the statute gave the Dental Board discretionary power in deciding as to the reputability of colleges, and judicial in character and not subject to review by the courts. The present Illinois decision is similar in character. The Court's language is as follows:

"The Act does not define what a reputable college is, but vests the Board of Dental Examiners with power to determine this question, which is one of fact submitted to the Board for investigation and decision, which involves the exercise of judgment and discretion, is judicial in its nature, and when once exercised is final and not subject to review by the courts. But the discretion conferred must be fairly exercised in the interest of the public. Where it clearly appears that it has been abused or exercised arbitrarily, or with manifest injury, it may be controlled by mandamus."

The Court then reviews at length the course which had been pursued by the present Illinois Board in investigation of the standing of the Huxmann German-American College and decides that the Board had acted entirely within its legal powers. Thus the opinion so often expressed in our pages that this school was not reputable has at last been adopted by the Illinois Board and sustained by the Illinois Supreme Court.





Dr. Isaac J. Wetherbee.

The surviving members of the Board of Trustees of the Boston Dental College have learned with regret of the death of Dr. Isaac J. Wetherbee, a member of this board since it was organized as a corporation in 1868, and its first president, which office he held almost continuously from the time of such organization until 1899, when, in consequence of the changed conditions and methods of dental education, it seemed wise to suffer the college to become the dental department of Tufts College.

In recognition and remembrance of the unremitting constancy and devotion with which Dr. Wetherbee, during this long period of time, performed his official duties, this board has caused this minute to be made upon its records.

W. P. LEAVITT,
S. G. STEVENS,
B. S. LADD,
Committee.

Dr. Walter V. Elliott.

Dr. Walter V. Elliott died at his home, 901 Penn avenue, Elmira, N. Y., July 20, 1902, at 9.30 a. m. of pneumonia, which developed after a four weeks' attack of typhoid fever.

The deceased was born near Mansfield, Pa., September 4, 1861. After spending the early part of his life in school, he attended the State Normal School at that place, where he prepared himself for college. He graduated with honors from the University of Pennsylvania in the class of 1888.

After practising dentistry at Mansfield, Pa., for a few years, he removed to Elmira, where he has since been located. He enjoyed a large and ever increasing practice, which was well merited.

In 1898 the Doctor was united in marriage with Miss Frances Schrader, daughter of Mr. and Mrs. Burton Schrader of Tioga, Pa. He is survived by his wife and parents, Mr. and Mrs. Thomas D. Elliott and one sister, all of this place.

The deceased was a member of the First Baptist Church of this place. He was also largely interested in promoting the cause of temperance. He was at the head of the Good Templars of this city and county for several years. He had served in an official capacity a number of times in the county and city organization of the Prohibition party. He was a member of the Sixth District Dental Society and also the State organization. He also was a member of Ivy Lodge No. 397, F. and A. M. He was the patentee of the Elliott cement syringe, and had just completed a system for the making of seamless gold crowns.

CORRESPONDENCE

Treatment for Hypertrophy of the Vault.

EDITOR OF ITEMS OF INTEREST:

I read with great pleasure your paper on "*Artificial Dentures*," published in the May, 1902, *Cosmos*. Whilst I have not the honor of your personal acquaintance, I have read many of your contributions to dental literature, and I now metaphorically *seize* your hand. I like you for your admirable defense of Bonwill, who, I think, was the greatest prosthodontist the world has produced.

It was my good fortune to possess a copy of the "Dental Laboratory" which contained Dr. Bonwill's *first* description of his anatomical articulator and his method of articulation, since which time I have endeavored to construct my dentures in accordance therewith, and with that degree of success that occasionally I have a patient who can masticate *beefsteak very minutely fine*, which fact I demonstrate by having the patient chew it and then take it from the mouth and examine it. "Proof of the pudding may be the 'chewing' of it."

Your method of using rather stiff plaster for taking the impression, in cases where the tissues have become thickened or hypertrophied by previous use of a bad fitting plate is quite correct. But a still better method I think, or supplementary thereto, is that of Dr. C. P. Pruyn, of Chicago, who makes use of the old plate in preliminary treatment to *cure* the trouble *before* taking the impression for a new set. This he does by mixing oxyphosphate cement and placing it on the palatal surface of the old plate at the points where the tissues are *thickened* and then placing it in the mouth with pressure, as if taking the impression with plaster.

This is worn several days, or weeks sometimes, and more of the cement may be added from time to time until the thickened tissues are reduced to their normal healthful relation.* It is quite astonishing how quickly the thickened "wobbling" mass will often disappear under this simple management. Patients have no objection to it, for it makes the plate "stay up" in most cases and adds to the comfort of wearing in many ways. It is the best method I have learned in thirty years for preliminary treatment.

If a plate be made with the tissues apparently in normal condition and the plate is a disappointment—does not stay up—I would suggest the use of cement spread over the entire palatal surface and placed back in position with considerable pressure. This will approximately equalize the pressure of the whole area of the palatal surface—a sort of ironing down to an even density by the *closer fit* than was obtained by the original plaster, and subsequent variations of model and plate in the making. When the improved condition of the mouth is at the best, take a new impression, and from this part of the case "the burden will be lifted off," or a good theory be spoiled.

I abjure you, however, to preach Bonwill while you have breath and strength to last, and you will do the profession and humanity a service.

Respectfully,

T. W. PRITCHETT.

White Hall, Ill.

Oral Hygiene as Taught in Schools.

EDITOR OF ITEMS OF INTEREST:

In the August issue of your magazine there is an interesting article on "Public Dental Service" by Dr. Irwin. He quoted the answers to some of the questions sent to the superintendents of various schools, and almost all stated that oral hygiene is taught in the schools. True it is taught. Allow me to quote from the text book used in the high school of this "classic city," where they boast that there is no inhabitant that cannot read and write. This book is by J. C. Hutchinson, M.D., LL.D.

"Mastication: As soon as solid food is taken into the mouth, it undergoes mastication or chewing; it is caught between the opposite

* I recall a case where Dr. Wm. H. Atkinson successfully resorbed by this means an enormous mass completely occupying the vault which had been erroneously declared to be epithelcoma. Numerous oxyphosphate linings were successively made until eventually a cure was effected and a denture supplied.—EDITOR.

surface of the teeth, and by them is cut and crushed into very small fragments.

"In the movement of chewing, the lower jaw plays the chief part; the upper jaw, having almost no motion, acts simply as a point of resistance, to meet the action of the former. These movements of the lower jaw are of three sorts, an up and down, or cutting; a lateral, or grinding, and a to and fro, or gnawing, motion.

"The teeth are composed of a bone-like material and are held in place by roots running deep in the jaw. The exposed portion or "crown" is protected by a thin layer of enamel, the hardest substance in the body, and, like flint, is capable of striking fire with steel. (Important?)

"In the interior of each tooth is a cavity containing blood vessels and a nerve which enter it through a minute opening in the point of the root. There are two sets of teeth: first, those belonging to the earlier years of childhood, called the milk teeth, which are twenty-six in number and small. At six or eight years of age, when the jaw expands and when the growing body requires a more powerful and numerous set, the roots of the milk teeth are absorbed, and later are "shed" or fall out, one after another, to make room for the permanent set. There are thirty-two teeth in the permanent set, an equal number in each jaw. Each half jaw has eight teeth similarly shaped and arranged in the same order, thus: two incisors, one canine, two bicuspid and three molars. The front teeth are small, sharp and chisel-edged and are well adapted for cutting purposes; hence their name incisors. The canines stand next, one on each side of the jaw; they receive their name from their resemblance to the long pointed tusks of the dog. The bicuspid, next in order, are larger and have a broader crown than the former, while behind them are the molars, the largest and most powerful of the entire set. These large back teeth or "grinders" present a broad, rough surface suitable for holding and crushing food. The third molar or wisdom tooth is the last to be cut; it does not appear until about the twenty-first year. The arrangement of the teeth is indicated by the following dental formula.

M 3 M

B 2 B

C 1 C

4—I

"It is interesting at this point to notice the different forms of the teeth in different animals and observe how admirable their teeth are suited to the respective kinds of food upon which they feed. In the carnivora or flesh feeders the teeth are sharp and pointed, enabling them to seize

their prey and tear it to pieces, while the herbivora or vegetable feeders have broad, blunt teeth with rough corners suitable for grinding the tough grasses upon which they feed. Human teeth partake of both forms; some of them are sharp and others are blunt; they are, therefore, well adapted for the mastication of both flesh and vegetables. Hence we infer that although man may live exclusively upon either vegetable or animal food, he should when possible choose a diet made up of both varieties.

**Preservation
of the Teeth.**

"In order that the teeth should remain in a sound and serviceable condition, some care is of course requisite.

"In the first place they require frequent cleansing, for every time we take food some particles of it remain in the mouth, and there, on account of the heat and moisture present, soon begin to putrefy. This not only renders the breath very offensive, but promotes decay of the teeth. The saliva or moisture of the mouth undergoes a putrefactive change and becomes the fertile soil in which a certain minute fungus has growth. This fluid, too, if allowed to dry in the mouth, collects upon the teeth in the form of an unsightly yellow concretion, called tartar. (New theory.) To prevent this formation and to remove other offensive substances the teeth should be frequently cleaned with water applied by means of a soft tooth brush. The prevention of the tartar fungus (is it possible Drs. Miller and Black have overlooked this one?) is best effected by the use of a weak solution of carbolic. It should be borne in mind that the enamel, Nature's protection for the teeth, when once destroyed, is never formed anew, and the body of the tooth thus exposed is liable to rapid decay. On this account certain articles are to be guarded against, such as sharply acid substances that corrode the enamel, and hard substances that break or scratch it, as gritty tooth powder, metal tooth picks and the shells of hard nuts. Sudden alternative from heat to cold when eating or drinking also tend to crack the enamel."

I have had patients from the high school say, "they didn't see why they had that tartar on their teeth, as they used plenty of carbolic acid."

Nothing is said in the above article about the use of the teeth, nor of the value of mastication of the food both as a tooth saver and stomach saver. It is to my mind very deficient. If some good dentist would take it upon himself to write a small book about the care of the teeth and then let the dentists throughout the country recommend its use in the schools, some good will be accomplished in teaching oral hygiene.

In the July number of *ITEMS OF INTEREST* the paper by Dr. Samuel A. Hopkins, on "Some Thoughts on the Prevention of Caries," is an article that should be read before mothers' clubs instead of dental societies, and it should be published where the greatest number of the laity could read

it. Such articles as this should be printed in the daily papers, and there would be less need of the so-called beauty hints as to the cure of pimples and facial blemishes.

I am strongly in favor of oral hygiene, and anything that I can do to spread the doctrine I will do willingly.

J. J. HOFFER, D.D.S.

Evanston, Ill.





National Society Meetings.

American Society of Orthodontists, Philadelphia, Pa., Oct. 8, 9, 10.

State Society Meetings.

District of Columbia Dental Society, Washington, Dec. 16.

Northeastern Dental Association, Worcester, Mass., Oct. 15, 16, 17.

Northern Illinois Dental Society, Rockford, Ill., Oct. 15, 16.

Ohio State Dental Society, Columbus, Dec. 2, 3, 4.

Southern California Dental Association, Riverside, Cal., Oct. 20, 21.

Southwestern Iowa Dental Association, Clarinda, Iowa, Oct. 14, 15.

The American Society of Orthodontists.

Second annual meeting of the American Society of Orthodontists, Philadelphia, Oct. 8, 9, 10. Headquarters, Continental Hotel.

Papers, The President's Address; Normal and Pathological Anatomy of the Alveolar Process and Adjacent Tissue, M. H. Cryer; subject to be announced, Edward C. Kirk; Art in Relation to Orthodontia, Edward H. Angle; The Deformities of the Superior Maxilla from the Standpoint of the Rhinologist, C. H. Kohler; The Causes of Malocclusion, Wm. J. Brady; Retrusion of Both Jaws with a Single Appliance, R. Ottolengui; Nasal Occlusion and Septal Deviation in Their Relation to Antral Development and Facial Expression, Royal S. Copeland; Orthodontia From the Standpoint of a Student, Anna Hopkins; Distal Movement of Molars and Bicusps Limiting Extraction, Lloyd S. Lourie; Stationary and Re-

movable Appliances, Alone and in Combination, H. A. Pullen; subjects to be announced, W. Booth Pearsall, J. Humphries, J. E. Grevers.

Time will be reserved for the consideration of specimens pertaining to orthodontia which any one may care to present. A cordial invitation is extended to the profession.

MILTON T. WATSON, Secretary.

270 Woodward Avenue, Detroit.

Southwestern Iowa Dental Association.

The Southwestern Iowa Dental Association will hold its meeting at Clarinda, Iowa, Oct. 14 and 15.

Lamoni, Iowa.

WILL J. MATHER, Secretary.

Southern California Dental Association.

The fifth annual meeting of the Southern California Dental Association will be held at Riverside, Cal., Oct. 20 and 21. An interesting program has been provided.

Los Angeles, Cal.

LEWIS E. FORD, Secretary.

Northern Illinois Dental Society.

The fifteenth annual meeting of the Northern Illinois Dental Society will be held at Rockford, Oct. 15 and 16, 1902. Members of the profession are cordially invited.

J. J. REED, Secretary.

Rockford, Ill.

Seventh and Eighth District Dental Societies.

A union meeting of the Seventh and Eighth District Dental Societies will be held in Buffalo, Oct. 28 and 29. The business committee are sparing no effort to make this a most successful meeting.

R. W. WHIPPLE, Secretary.

326 W. Ferry St., Buffalo, N. Y.

Northeastern Dental Association.

The eighth annual meeting of the Northeastern Dental Association will convene in the city of Worcester, Mass., Oct. 15, 1902, and continue through Oct. 17. This meeting promises to be better than its predecessors in essays, clinics and exhibits. Invitation is extended to New England dentists, members of their respective State dental societies to attend and join the Association. Remember the dates. One and one-third fare certificate plan on all railroads.

EDGAR O. KINSMAN, Secretary.

15 Brattle Square, Cambridge, Mass.

Vermont Board of Dental Examiners.

A meeting of the Vermont Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, Wednesday, Oct. 8, 1902, at 2 p. m. for the examination of candidates to practice dentistry. The examination will be in writing, and will include anatomy, physiology, bacteriology, chemistry, metallurgy, pathology, therapeutics, surgery, materia medica, anaesthesia, operative and prosthetic dentistry, together with an operation in the mouth. Candidates must come prepared with instruments, rubber dam and gold. Applications, together with the fee, ten dollars, must be filed with the secretary on or before Oct. 1.

St. Johnsbury, Vt.

GEO. F. CHENEY, Secretary.

Maryland State Board of Dental Examiners.

The Maryland State Board of Dental Examiners will meet for the examination of candidates for certificates on Wednesday and Thursday, Nov. 5 and 6, 1902, at the Baltimore College of Dental Surgery, corner of Eutaw and Franklin Streets, Baltimore, Md., at 9 a. m. Application blanks and all information will be furnished by the secretary.

F. F. DREW, Secretary.

701 N. Howard Street, Baltimore, Md.

New Jersey State Board of Dental Examiners.

The New Jersey State Board of Dental Examiners will hold their fall meeting for examinations on Tuesday, Oct. 21, Wednesday, Oct. 22, and Thursday, Oct. 23. Further information may be had of the secretary.

J. ALLEN OSMUN, Secretary.

588 Broad Street, Newark, N. J.

Jalisco Dental Society.

At a meeting of the dentists of Guadalajara, August 13, the Jalisco Dental Society was organized, and the following officers elected to serve one year: President, J. W. Purnell; Vice-President, R. M. Ramos; Secretary, J. A. Leland; Treasurer, Francisco Lake; Committee of Laws, Drs. O'Neil, G. E. Purnell, Ramos and McConnell.

J. A. LELAND, Secretary.

Harvard Dental Alumni Association.

The following are officers elected for the ensuing year, at the thirty-first annual meeting, held June 23, 1902: President, Luther D. Shepard, '79, Boston, Mass.; vice-president, Charles E. Perkins, '90, Brockton, Mass.; secretary, Waldo E. Boardman, '86, Boston, Mass.; treasurer, E. Proctor Holmes, '88, Boston, Mass. Executive committee—Waldo E. Boardman, '86, Boston, Mass.; William P. Cooke, '81, Boston, Mass.; New A. Stanley, '84, New Bedford, Mass. The council is composed of the officers of the association.

WALDO E. BOARDMAN, Secy.

Boston, Mass.

The Colorado State Dental Association.

At the sixteenth annual meeting of the Colorado State Dental Association, held in the Alta Vista Hotel, Colorado Springs, June 17, 18 and 19, the following officers were elected for the ensuing year: President, H. B. Hayden, Colorado Springs; vice-president, E. W. Varley, Pueblo; secretary, W. A. Brierley, Denver; treasurer, Wm. Smedley, Denver. The candidates elected for appointment by the Governor on the State

Board of Dental Examiners were: W. H. Hall, Denver; H. F. Hoffman, Denver; M. H. Smith, Denver; Theodore Ashley, Cannon City; Geo. R. Warner, Grand Junction.

The next meeting will be held in Pueblo, June 16, 17 and 18, 1903.

W. A. BRIERLEY, Secretary.

70 Barth Block, Denver, Colorado.

National Board Dental Examiners.

The following officers were elected at the meeting of the National Board of Dental Examiners held at Niagara Falls, July 28, 29, 30, 31, 1902:

OFFICERS.

President.—Charles A. Meeker, Newark, N. J.

Vice-President from the West.—Burton Lee Thorpe, St. Louis, Mo.

Vice-President from the East.—J. A. Libby, Pittsburg, Pa.

Vice-President from the South.—J. A. Hall, Collinsville, Ala.

Secretary.—Joseph P. Root, Kansas City, Kas.

Committee on Colleges.—C. C. Chittenden, Madison, Wis.; J. A. Hall, Collinsville, Ala.; H. J. Burkhart, Batavia, N. Y.

Committee on Conference.—G. E. Mitchell, Haverhill, Mass.; J. G. Reid, Chicago, Ill.; J. A. Libby, Pittsburg, Pa.

Membership Committee.—W. M. Darwood, Omaha, Neb.; P. J. Heffern, Pawtucket, R. I.; J. E. Weirrick, St. Paul, Minn.

State Advisory Committee.—William Jarvie, Brooklyn, N. Y.; F. A. Shotwell, Rogersville, Tenn.; H. J. Allen, Washington, D. C.

Committee for Promoting Relations With Foreign Examiners.—William Carr, New York City; G. W. Pelzer, Great Falls, Montana; H. W. Campbell, Suffolk, Va.; R. H. Jones, Winston, N. C.

Committee on Contracts and Accommodations.—J. Allen Osmun, Newark, N. J.

The National Association of Colored Dentists.

At the second annual meeting of the National Association of Colored Dentists, held at Washington, D. C., July 3, 4 and 5, 1902, the following officers and committee were elected: Dr. D. H. Ferguson, Richmond, Va., president; Dr. A. J. Gwathney, Washington, D. C., vice-president; Dr. D. W. Onley, Washington, D. C., secretary; Dr. A. M. Waring, Washington, D. C., treasurer. Executive Committee: Dr. W. E. Hamilton, Anacostia, D. C.; Dr. C. C. Fry, Georgetown, D. C.; Dr. R. G.

Baker, Baltimore, Md.; Dr. C. S. Gray, Washington, D. C., and Dr. D. A. Ferguson, Richmond, Va.

The attendance was large, the papers were instructive and elicited much discussion.

The next meeting will be held at Washington, D. C., July 2, 3 and 4, 1903.

Tennessee Dental Association.

The thirty-fifth annual meeting of the Tennessee Dental Association was held at Mont Eagle, Tenn., July 8, 9 and 10. Dr. J. T. Meadors presiding. Thoughtful papers, heated discussions, interesting clinics, a pleasant place of meeting and a good attendance made this one of the most interesting meetings held for several years. Six new members were added to the roll and several absentees sent in their dues, thus showing an increased interest in association work. A committee was appointed and a fund appropriated to co-operate with other societies in the matter of securing aid from the Carnegie Institute at Washington, D. C., to assist in scientific research along certain lines of special interest to the profession. The following officers were elected for the ensuing year, viz.: President, Dr. W. K. Slater, Knoxville, Tenn.; 1st Vice-President, Dr. R. Boyd Bogle, Nashville, Tenn.; 2d Vice-President, Dr. W. P. Menzies, Dyersburg, Tenn.; Recording Secretary, Dr. A. S. Page, Columbia, Tenn.; Corresponding Secretary, Dr. J. T. Meadors, Columbia, Tenn.; Treasurer, Dr. J. D. Towner, Pulaski, Tenn. Executive Committee: Dr. J. W. Peete, chairman, Memphis, Tenn.; Dr. A. R. Melendy, Knoxville, Tenn.; Dr. J. R. Beach, Clarksville, Tenn.

Chattanooga, Tenn., was chosen as the next place of meeting and the date left with the Executive Committee.

Columbia, Tenn.

A. S. PAGE, Secretary.

New England Alumni Association of the Philadelphia Dental College

The third annual meeting and banquet of the New England Alumni Association of the Philadelphia Dental College will be held in Worcester, Mass., Wednesday, Oct. 15, 1902. The place of meeting will be announced at the meeting of the Northeastern Dental Association. All ethical graduates are cordially invited to attend.

New Haven, Conn.

D. W. JOHNSTON, Secretary.